INTERFERON

STAT1

PKR

eIF-2α eIF-2α -P NFκ B NFκB:IκB

INHIBITION OF PROTEIN SYNTHESIS SELECTIVE GENE TRANSCRIPTION

ANTI-VIRAL ACTIVITY, APOPTOSIS, CELL CYCLE ARREST

FIGURE 1

TIME POST INFECTION
(HOURS)

FIGURE 2

VSV INFECTION OF NORMAL HUMAN FIBROBLASTS
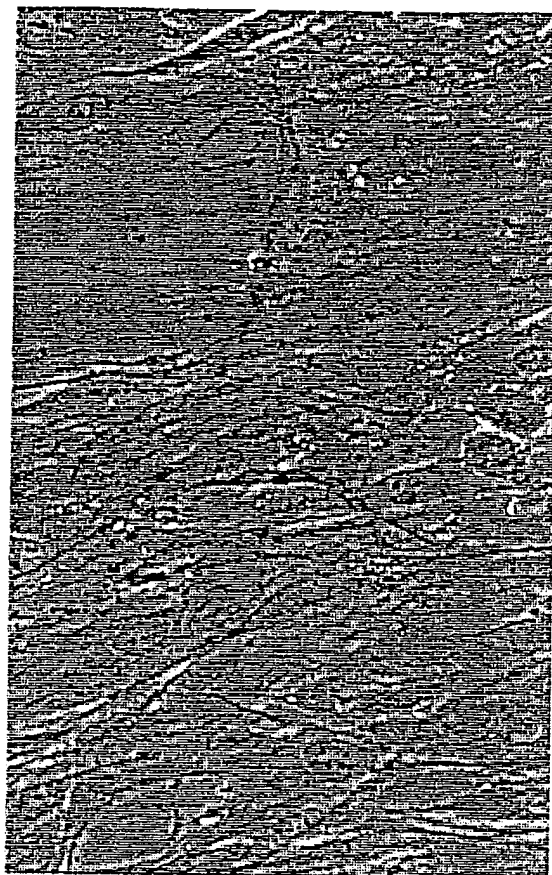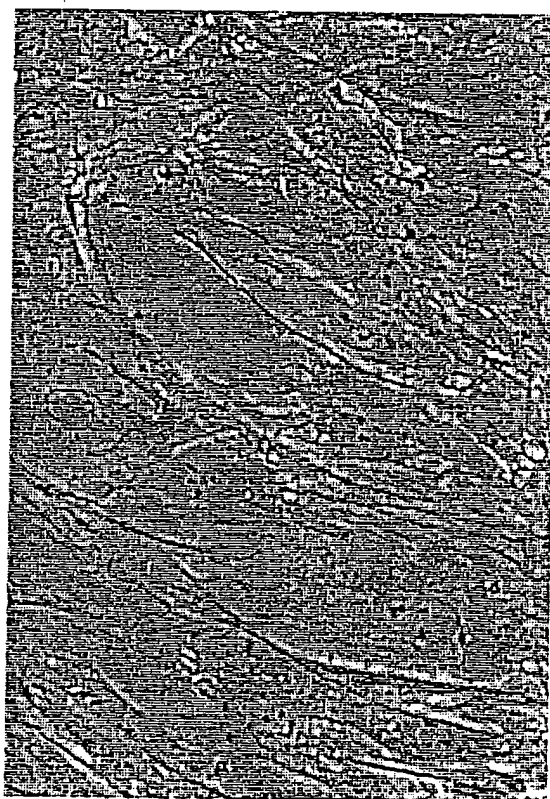
MOCK INFECTED

VSV MOI 1 PFU/18 HOURS

FIGURE 3A

VSV INFECTION OF OVCAR433
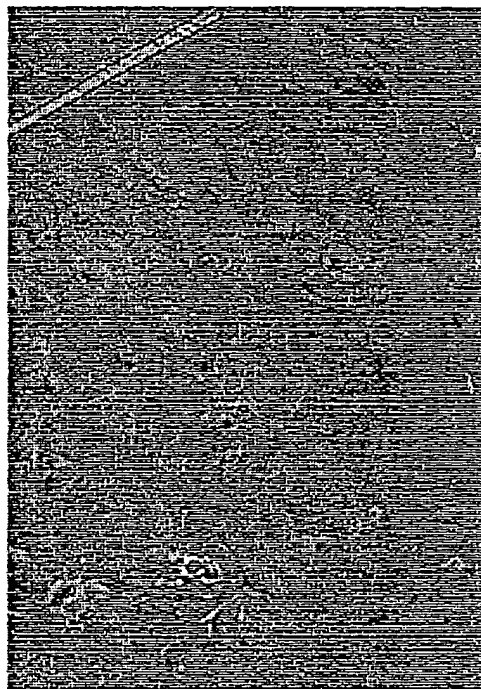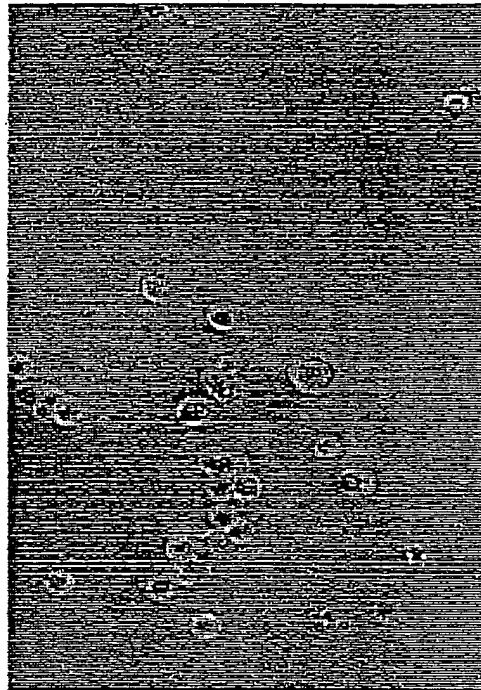
MOCK INFECTED   VSV 0.1PFU/18 HRS

FIGURE 3B

VSV INFECTION OF KB CELLS

VSV moi 1 PFU/18HRS

MOCK INFECTED

FIGURE 3C

MOI 0.1
IFN (-)

MOI 0.1
IFN (I)

0 Hours

18 Hours

24 Hours
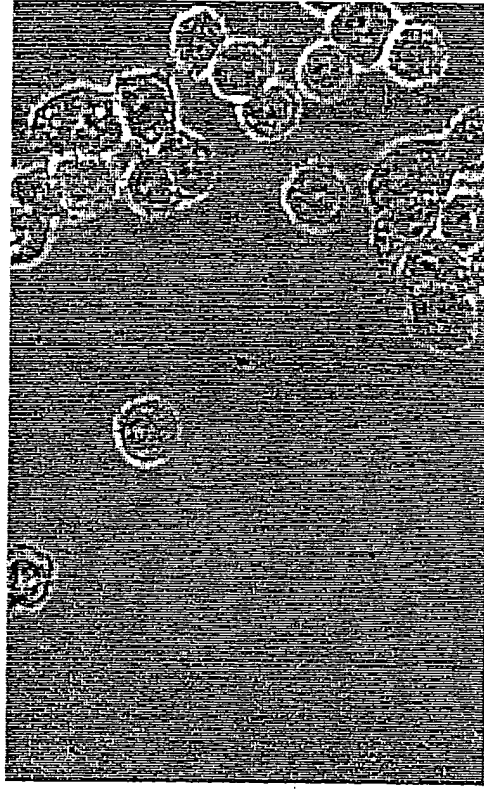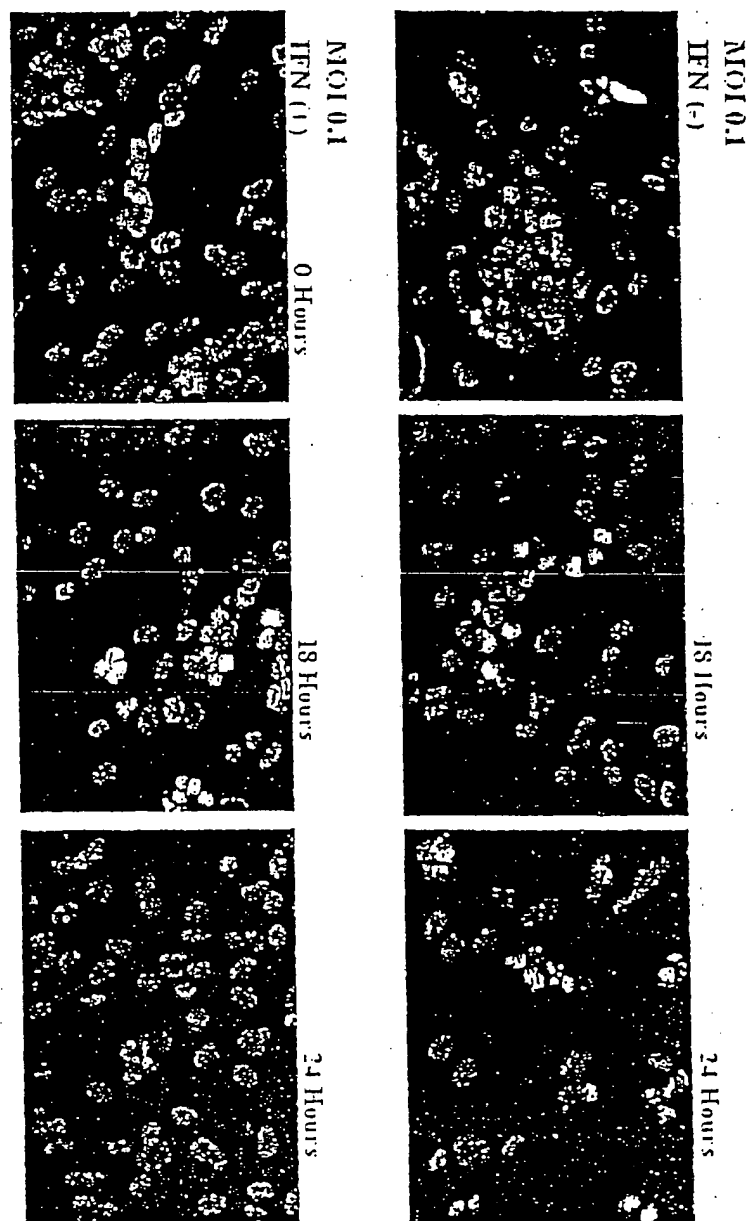
FIGURE 4

Nude Mouse Tumours

VSV(-)
VSV(+)

Tumour size (mean area)

Days
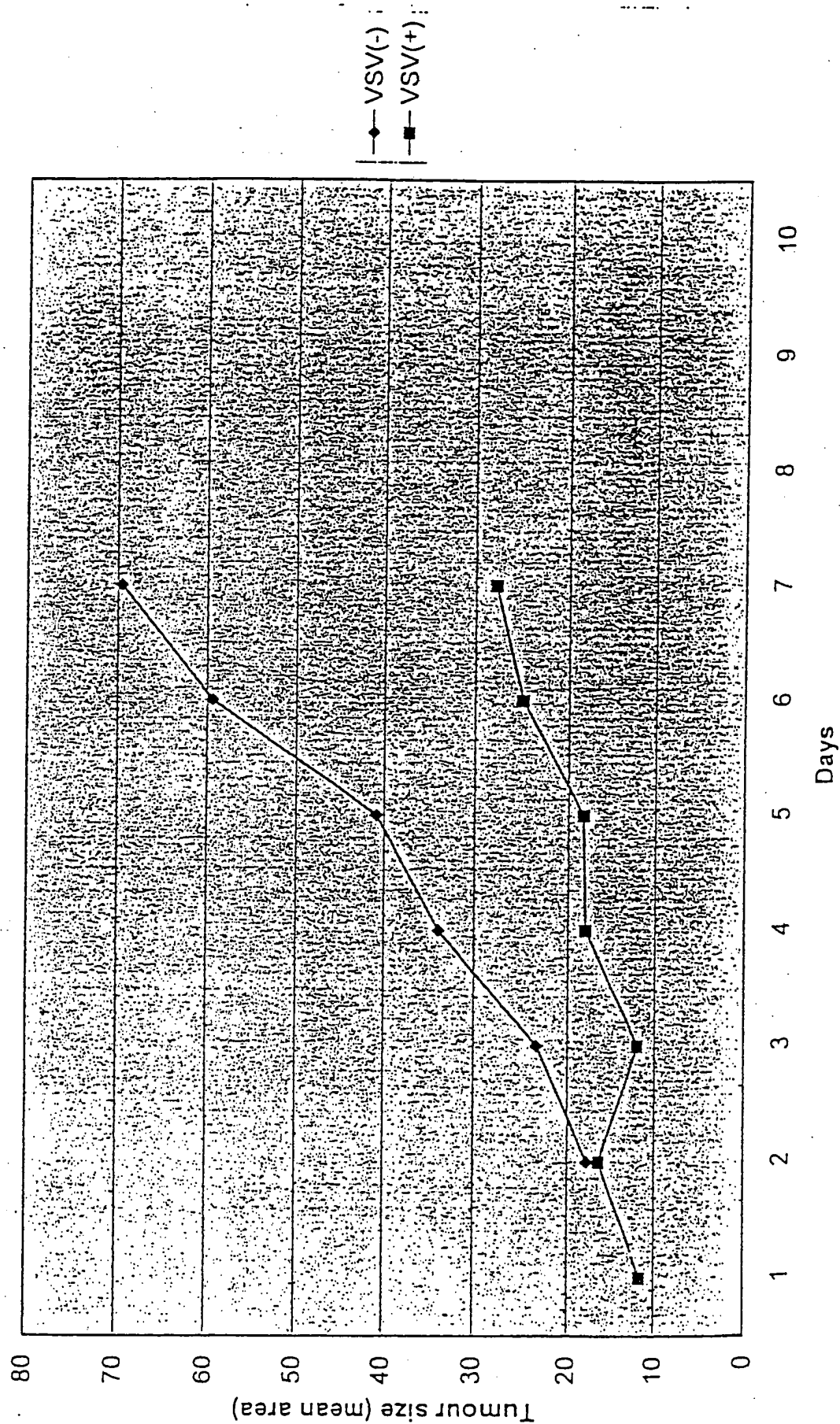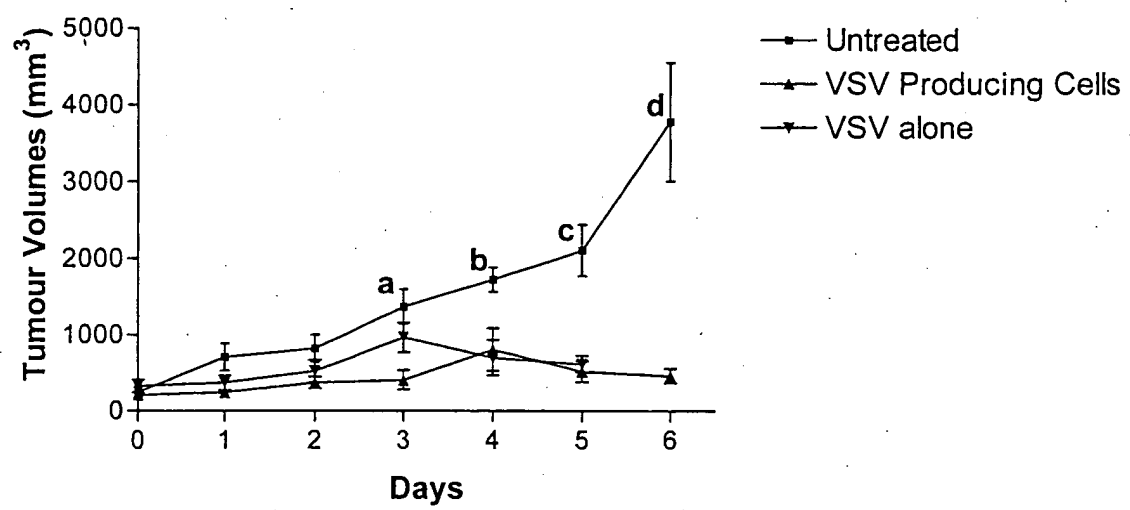
FIGURE 15

FIGURE 6

FIGURE 7
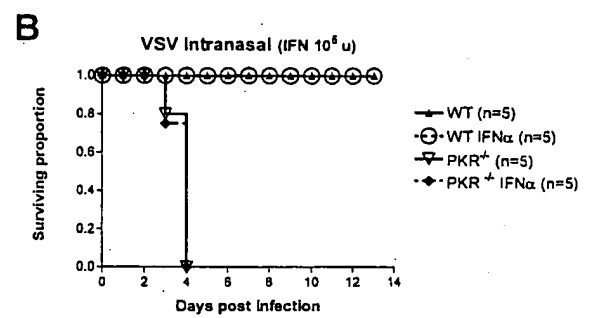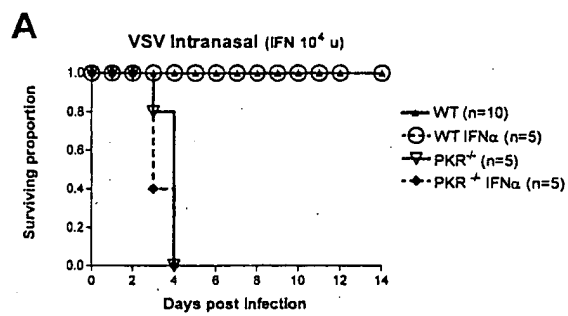
FIGURES 8A AND 8B

FIGURE 9

FIGURE 10A

Time Course VSV Titres - OSF7 - M.O.I. = 1.5

Legend:
- Mutant I
- Mutant II
- Mutant III
- Mutant IV
- WT Indiana

Y-axis: Titre (pfu/ml)
X-axis: Time (hours)

FIGURE 10B

A

	0	12	24	36	48	60	72	CTRL	IFN-α
AG 1522									+
									−

B

	0	12	24	36	48	CTRL	IFN-α
LNCAP							+
							−
A2780							+
							−
Sk MEL3							+
							−
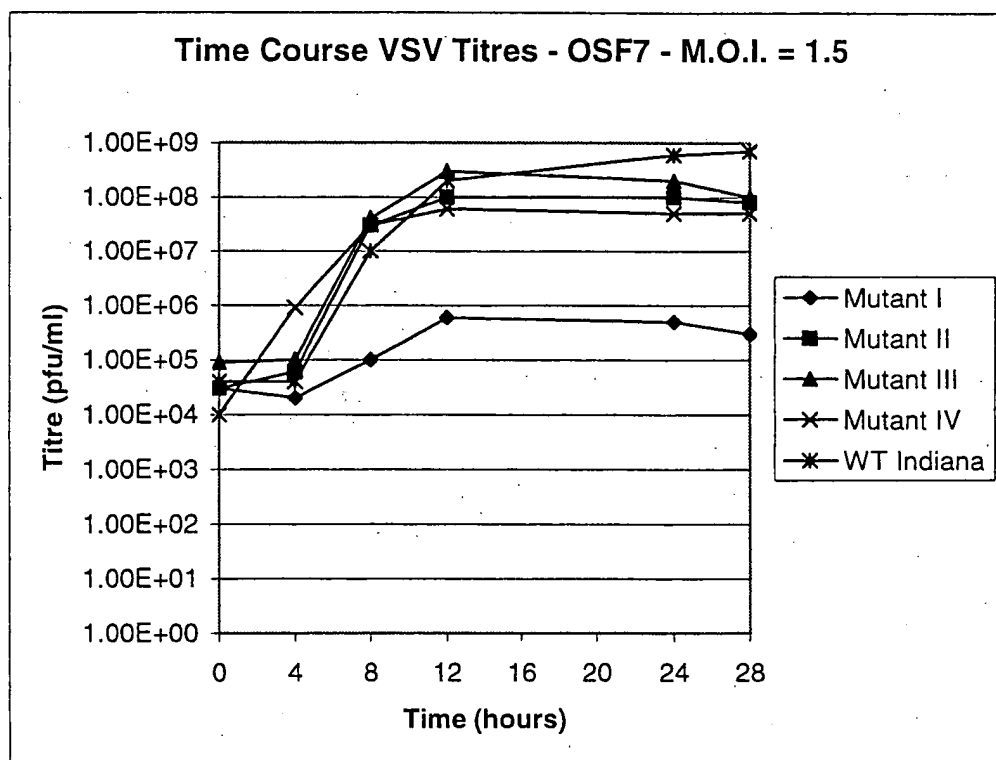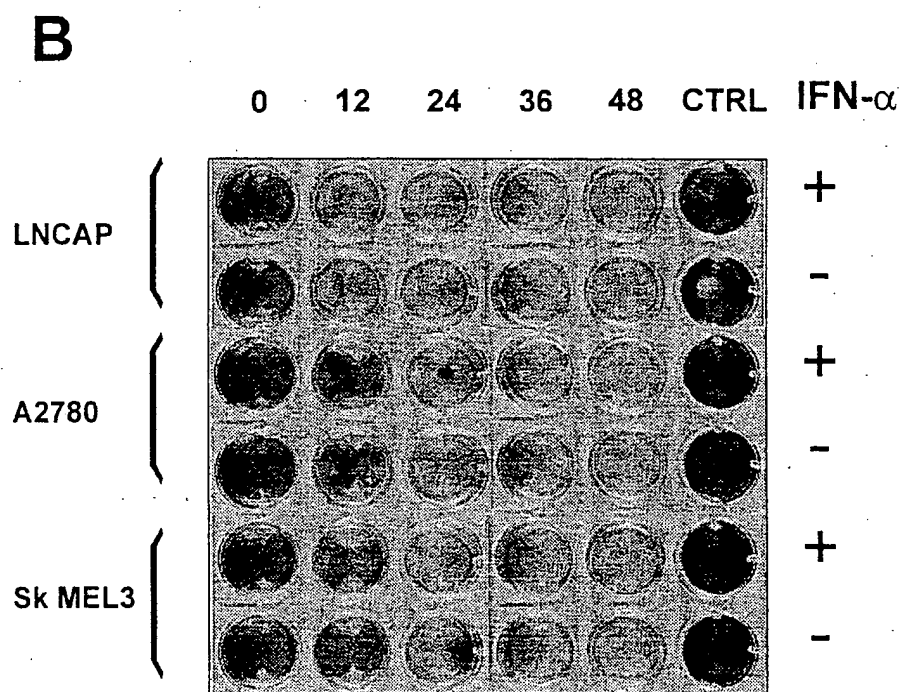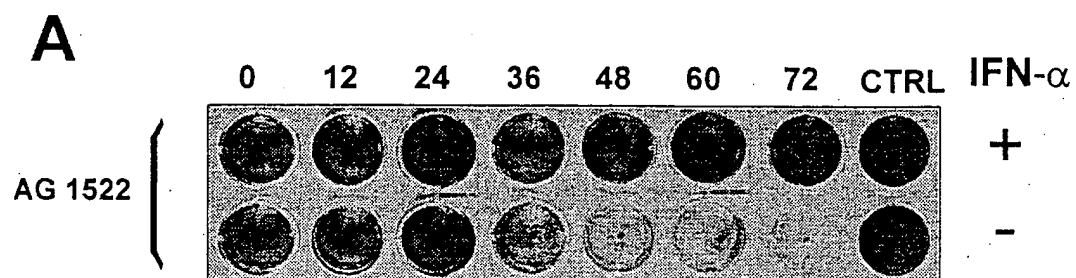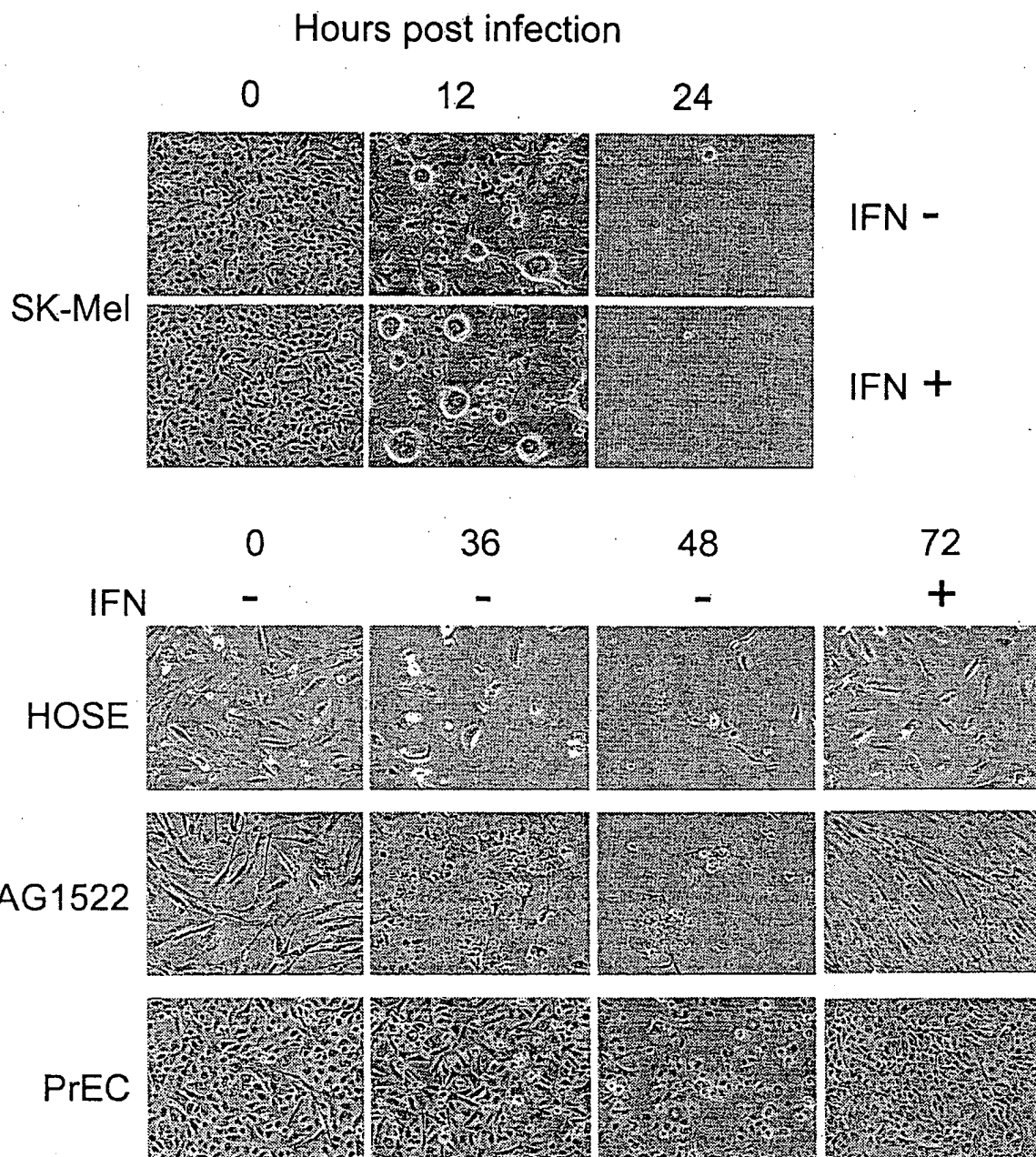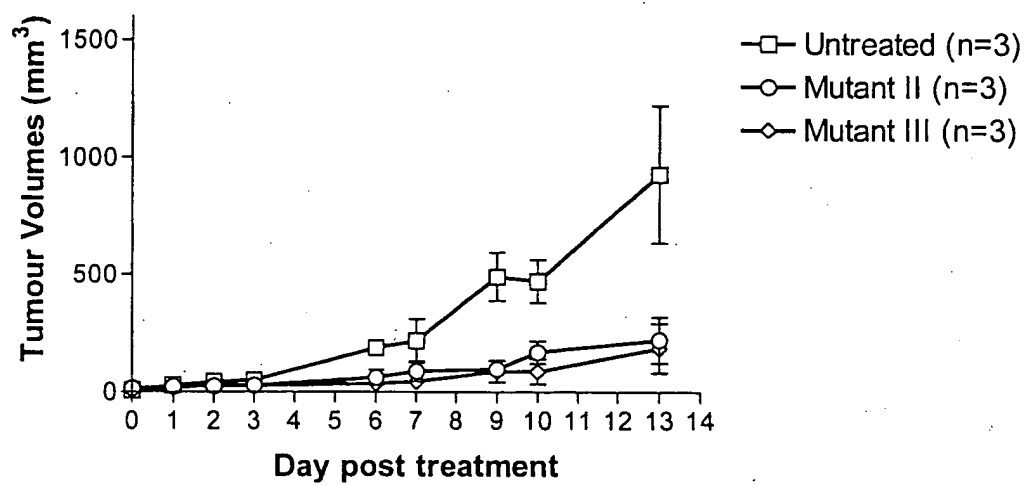
FIGURE 11

FIGURE 12

FIGURE 13

```
                  1                                                          60
GenBank N nucl.   ATGTCTGTTACAGTCAAGAGAATCATTGACAACACAGTCATAGTTCCAAAACTTCCTGCA
    HR N nucl.    ATGTCTGTTACAGTCAAGAGAATCATTGCCAACACAGTCATAGTTCCAAAACTTCCTGCA
    M2 N nucl.    ATGTCTGTTACAGTCAAGAGAATCATTGACAACACAGTCATAGTTCCAAAACTTCCTGCA
    M3 N nucl.    ATGTCTGTTACAGTCAAGAGAATCATTGACAACACAGTCATAGTTCCAAAACTTCCTGCA
    M4 N nucl.    ............................................................

                  61                                                        120
GenBank N nucl.   AATGAGGATCCAGTGGAATACCCGGCAGATTACTTCAGAAAATCAAAGGAGATTCCTCTT
    HR N nucl.    AATGAGGATCCAGTGGAATACCCGGCAGATTACTTCAGAAAATCAAAGGAGATTCCTCTT
    M2 N nucl.    AATGAGGATCCAGTGGAATACCCGGCAGATTACTTCAGAAAATCAAAGGAGATTCCTCTT
    M3 N nucl.    AATGAGGATCCAGTGGAATACCCGGCAGATTACTTCAGAAAATCAAAGGAGATTCCTCTT
    M4 N nucl.    ............................................................

                  121                                                       180
GenBank N nucl.   TACATCAATACTACAAAAAGTTTGTCAGATCTAAGAGGATATGTCTACCAAGGCCTCAAA
    HR N nucl.    TACATCAATACTACAAAAAGTTTGTCAGATCTAAGAGGATATGTCTACCAAGGCCTCAAA
    M2 N nucl.    TACATCAATACTACAAAAAGTTTGTCAGATCTAAGAGGATATGTCTACCAAGGCCTCAAA
    M3 N nucl.    TACATCAATACTACAAAAAGTTTGTCAGATCTAAGAGGATATGTCTACCAAGGCCTCAAA
    M4 N nucl.    ............................................................

                  181                                                       240
GenBank N nucl.   TCCGGAAATGTATCAATCATACATGTCAACAGCTACTTGTATGGAGCATTAAAGGACATC
    HR N nucl.    TCCGGAAATGTATCAATCATACATGTCAACAGCTACTTGTATGGAGCATTGAAGGACATC
    M2 N nucl.    TCCGGAAATGTATCAATCATACATGTCAACAGCTACTTGTATGGAGCATTGAAGGACATC
    M3 N nucl.    TCCGGAAATGTATCAATCATACATGTCAACAGCTACTTGTATGGAGCATTGAAGGACATC
    M4 N nucl.    ...........TCAATCATACATGTCAACAGCTACTTGTATGGAGCATTGAAGGACATC

                  241                                                       300
GenBank N nucl.   CGGGGTAAGTTGGATAAAGATTGGTCAAGTTTCGGAATAAACATCGGGAAAGCAGGGGAT
    HR N nucl.    CGGGGTAAGTTGGATAAAGATTGGTCAAGTTTCGGAATAAACATCGGGAAGGCAGGGGAT
    M2 N nucl.    CGGGGTAAGTTGGATAAAGATTGGTCAAGTTTCGGAATAAACATCGGGAAGGCAGGGGAT
    M3 N nucl.    CGGGGTAAGTTGGATAAAGATTGGTCAAGTTTCGGAATAAACATCGGGAAGGCAGGGGAT
    M4 N nucl.    CGGGGTAAGTTGGATAAAGATTGGTCAAGTTTCGGAATAAACATCGGGAAGGCAGGGGAT

                  301                                                       360
GenBank N nucl.   ACAATCGGAATATTTGACCTTGTATCCTTGAAAGCCCTGGACGGCGTACTTCCAGATGGA
    HR N nucl.    ACAATCGGAATATTTGACCTTGTATCCTTGAAAGCCCTGGACGGTGTACTTCCAGATGGA
    M2 N nucl.    ACAATCGGAATATTTGACCTTGTATCCTTGAAAGCCCTGGACGGTGTACTTCCAGATGGA
    M3 N nucl.    ACAATCGGAATATTTGACCTTGTATCCTTGAAAGCCCTGGACGGTGTACTTCCAGATGGA
    M4 N nucl.    ACAATCGGAATATTTGACCTTGTATCCTTGAAAGCCCTGGACGGTGTACTTCCAGATGGA

                  361                                                       420
GenBank N nucl.   GTATCGGATGCTTCCAGAACCAGCGCAGATGACAAATGGTTGCCTTTGTATCTACTTGGC
    HR N nucl.    GTATCGGATGCTTCCAGAACCAGCGCAGATGACAAATGGTTGCCTTTGTATCTACTTGGC
    M2 N nucl.    GTATCGGATGCTTCCAGAACCAGCGCAGATGACAAATGGTTGCCTTTGTATCTACTTGGC
    M3 N nucl.    GTATCGGATGCTTCCAGAACCAGCGCAGATGACAAATGGTTGCCTTTGTATCTACTTGGC
    M4 N nucl.    GTATCGGATGCTTCCAGAACCAGCGCAGATGACAAATGGTTGCCTTTGTATCTACTTGGC

                  421                                                       480
GenBank N nucl.   TTATACAGAGTGGGCAGAACACAAATGCCTGAATACAGAAAAAAGCTCATGGATGGGCTG
    HR N nucl.    TTATACAGAGTGGGCAGAACACAAATGCCTGAATACAGAAAAAGGCTCATGGATGGGCTG
    M2 N nucl.    TTATACAGAGTGGGCAGAACACAAATGCCTGAATACAGAAAAAGGCTCATGGATGGGCTG
    M3 N nucl.    TTATACAGAGTGGGCAGAACACAAATGCCTGAATACAGAAAAAGGCTCATGGATGGGCTG
    M4 N nucl.    TTATACAGAGTGGGCAGAACACAAATGCCTGAATACAGAAAAAGGCTCATGGATGGGCTG
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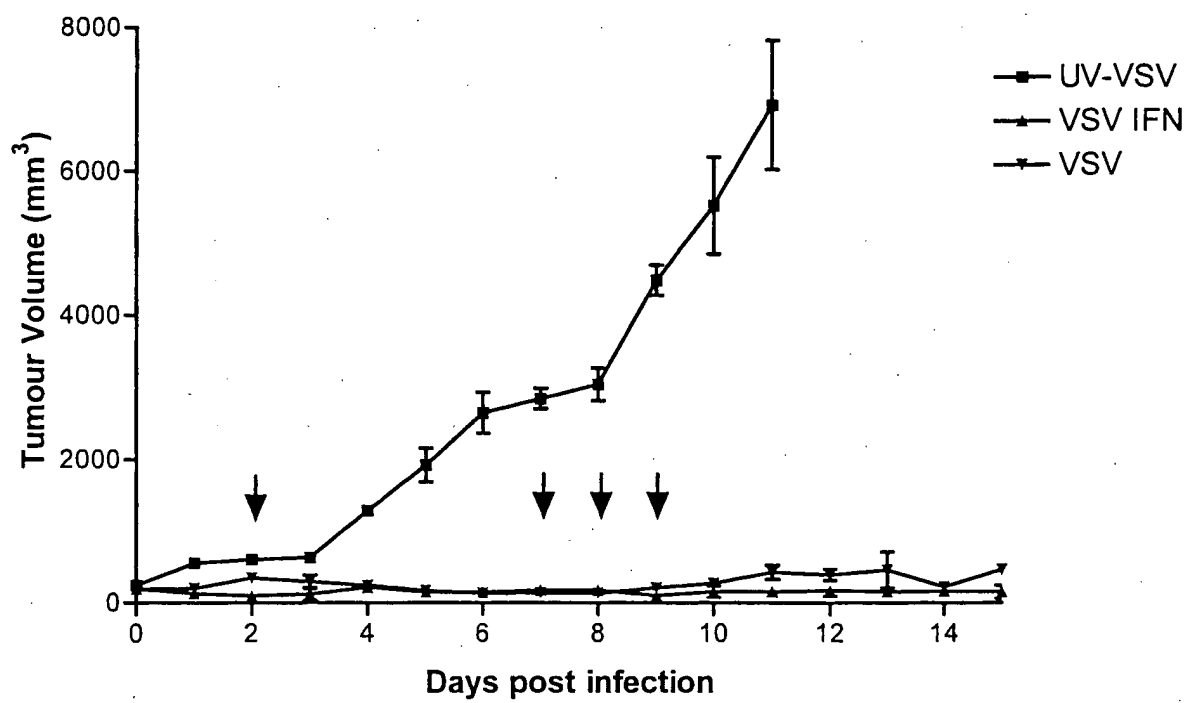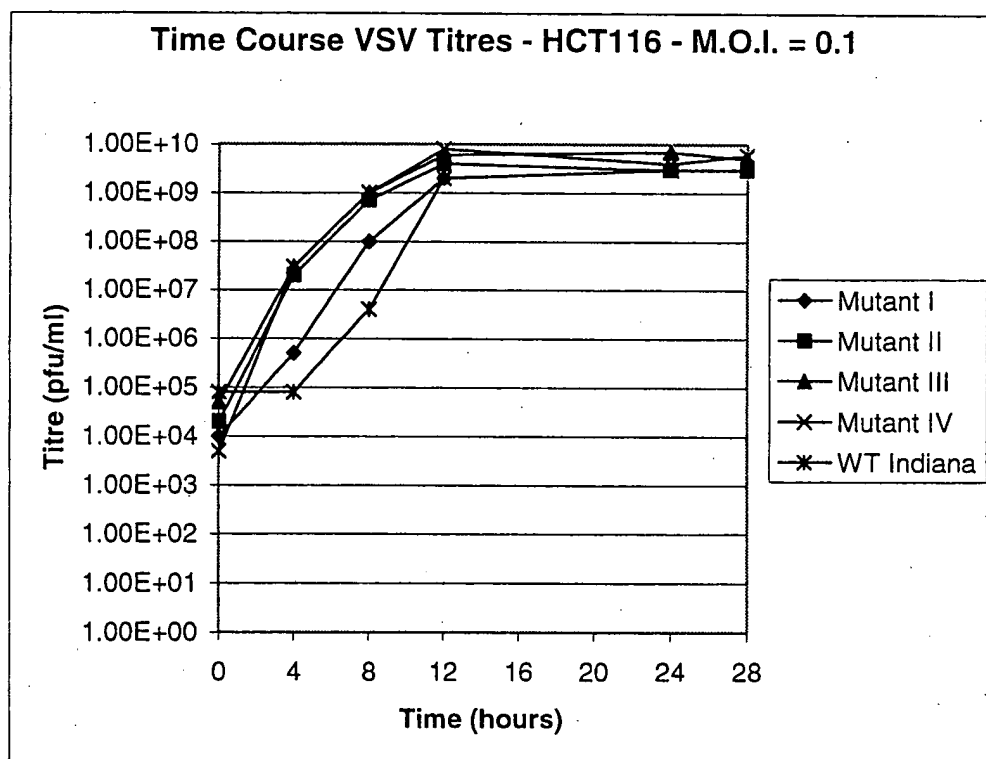
FIGURE 14-1

```
                481                                                      540
GenBank N nucl.  ACAAATCAATGCAAAATGATCAATGAACAGTTTGAACCTCTTGTGCCAGAAGGTCGTGAC
     HR N nucl.  ACAAATCAATGCAAAATGATCAATGAACAGTTTGAACCTCTTGTGCCAGAAGGTCGTGAC
     M2 N nucl.  ACAAATCAATGCAAAATGATCAATGAACAGTTTGAACCTCTTGTGCCAGAAGGTCGTGAC
     M3 N nucl.  ACAAATCAATGCAAAATGATCAATGAACAGTTTGAACCTCTTGTGCCAGAAGGTCGTGAC
     M4 N nucl.  ACAAATCAATGCAAAATGATCAATGAACAGTTTGAACCTCTTGTGCCAGAAGGTCGTGAC

                541                                                      600
GenBank N nucl.  ATTTTTGATGTGTGGGGAAATGACAGTAATTACACAAAAATTGTCGCTGCAGTGGACATG
     HR N nucl.  ATTTTTGATGTGTGGGGAAATGACAGTAATTACACAAAAATTGTCGCTGCAGTGGACATG
     M2 N nucl.  ATTTTTGATGTGTGGGGAAATGACAGTAATTACACAAAAATTGTCGCTGCAGTGGACATG
     M3 N nucl.  ATTTTTGATGTGTGGGGAAATGACAGTAATTACACAAAAATTGTCGCTGCAGTGGACATG
     M4 N nucl.  ATTTTTGATGTGTGGGGAAATGACAGTAATTACACAAAAATTGTCGCTGCAGTGGACATG

                601                                                      660
GenBank N nucl.  TTCTTCCACATGTTCAAAAAACATGAATGTGCCTCGTTCAGATACGGAACTATTGTTTCC
     HR N nucl.  TTCTTCCACATGTTCAAAAAACATGAATGTGCCTCGTTCAGATACGGAACTATTGTTTCC
     M2 N nucl.  TTCTTCCACATGTTCAAAAAACATGAATGTGCCTCGTTCAGATACGGAACTATTGTTTCC
     M3 N nucl.  TTCTTCCACATGTTCAAAAAACATGAATGTGCCTCGTTCAGATACGGAACTATTGTTTCC
     M4 N nucl.  TTCTTCCACATGTTCAAAAAACATGAATGTGCCTCGTTCAGATACGGAACTATTGTTTCC

                661                                                      720
GenBank N nucl.  AGATTCAAAGATTGTGCTGCATTGGCAACATTTGGACACCTCTGCAAAATAACCGGAATG
     HR N nucl.  AGATTCAAAGATTGTGCTGCATTGGCAACATTTGGACACCTCTGCAAAATAACCGGAATG
     M2 N nucl.  AGATTCAAAGATTGTGCTGCATTGGCAACATTTGGACACCTCTGCAAAATAACCGGAATG
     M3 N nucl.  AGATTCAAAGATTGTGCTGCATTGGCAACATTTGGACACCTCTGCAAAATAACCGGAATG
     M4 N nucl.  AGATTCAAAGATTGTGCTGCATTGGCAACATTTGGACACCTCTGCAAAATAACCGGAATG

                721                                                      780
GenBank N nucl.  TCTACAGAAGATGTAACGACCTGGATCTTGAACCGAGAAGTTGCAGATGA[A]ATGGTCCAA
     HR N nucl.  TCTACAGAAGATGTAACGACCTGGATCTTGAACCGAGAAGTTGCAGATGAGATGGTCCAA
     M2 N nucl.  TCTACAGAAGATGTAACGACCTGGATCTTGAACCGAGAAGTTGCAGATGAGATGGTCCAA
     M3 N nucl.  TCTACAGAAGATGTAACGACCTGGATCTTGAACCGAGAAGTTGCAGATGAGATGGTCCAA
     M4 N nucl.  TCTACAGAAGATGTAACGACCTGGATCTTGAACCGAGAAGTTGCAGATGAGATGGTCCAA

                781                                                      840
GenBank N nucl.  ATGATGCTTCCAGGCCAAGAAATTGACAAGGCCGATTCATACATGCCTTATTTGATCGAC
     HR N nucl.  ATGATGCTTCCAGGCCAAGAAATTGACAAGGCCGATTCATACATGCCTTATTTGATCGAC
     M2 N nucl.  ATGATGCTTCCAGGCCAAGAAATTGACAAGGCCGATTCATACATGCCTTATTTGATCGAC
     M3 N nucl.  ATGATGCTTCCAGGCCAAGAAATTGACAAGGCCGATTCATACATGCCTTATTTGATCGAC
     M4 N nucl.  ATGATGCTTCCAGGCCAAGAAATTGACAAGGCCGATTCATACATGCCTTATTTGATCGAC

                841                                                      900
GenBank N nucl.  TTTGGATTGTCTTCTAAGTCTCCATATTCTTCCGTCAAAAACCCTGCCTTCCACTTCTGG
     HR N nucl.  TTTGGATTGTCTTCTAAGTCTCCATATTCTTCCGTCAAAAACCCTGCCTTCCACTTCTGG
     M2 N nucl.  TTTGGATTGTCTTCTAAGTCTCCATATTCTTCCGTCAAAAACCCTGCCTTCCACTTCTGG
     M3 N nucl.  TTTGGATTGTCTTCTAAGTCTCCATATTCTTCCGTCAAAAACCCTGCCTTCCACTTCTGG
     M4 N nucl.  TTTGGATTGTCTTCTAAGTCTCCATATTCTTCCGTCAAAAACCCTGCCTTCCACTTCTGG
```

FIGURE 14-2

```
                      901                                                        960
GenBank N nucl.       GGGCAATTGACAGCTCTTCTGCTCAGATCCACCAGAGCAAGGAATGCCCGACAGCCTGAT
     HR N nucl.       GGGCAATTGACAGCTCTTCTGCTCAGATCCACCAGAGCAAGGAATGCCCGACAGCCTGAT
     M2 N nucl.       GGGCAATTGACAGCTCTTCTGCTCAGATCTACCAGAGCAAGGAATGCCCGACAGCCTGAT
     M3 N nucl.       GGGCAATTGACAGCTCTTCTGCTCAGATCCACCAGAGCAAGGAATGCCCGACAGCCTGAT
     M4 N nucl.       GGGCAATTGAC........................................T


                      961                                                       1020
GenBank N nucl.       GACATTGAGTATACATCTCTTACTACAGCAGGTTTGTTGTACGCTTATGCAGTAGGATCC
     HR N nucl.       GACATTGAGTATACATCTCTTACTACAGCAGGTTTGTTGTACGCTTATGCAGTAGGATCC
     M2 N nucl.       GACATTGAGTATACATCTCTTACTACAGCAGGTTTGTTGTACGCTTATGCAGTAGGATCC
     M3 N nucl.       GACATTGAGTATACATCTCTTACTACAGCAGGTTTGTTGTACGCTTATGCAGTAGGATCC
     M4 N nucl.       GACATTGAGTATACATCTCNTACTACAGCAGGTTTGTTGTACGCTTATGCAGTAGGATCC


                      1021                                                      1080
GenBank N nucl.       TCTGCCGACTTGGCACAACAGTTTTGTGTTGGAGATAACAAATACACTCCAGATGATAGT
     HR N nucl.       TCTGCTGACTTGGCACAACAGTTTTGTGTTGGAGATAGCAAATACACTCCAGATGATAGT
     M2 N nucl.       TCTGCTGACTTGGCACAACAGTTTTGTGTTGGAGATAGCAAATACACTCCAGATGATAGT
     M3 N nucl.       TCTGCTGACTTGGCACAACAGTTTTGTGTTGGAGATAGCAAATACACTCCAGATGATAGT
     M4 N nucl.       TCTGCTGACTTGGCACANCAGTTTTGTGTTGGAGATAGCAAATACACTCCAGATGATAGT


                      1081                                                      1140
GenBank N nucl.       ACCGGAGGATTGACGACTAATGCACCGCCACAAGGCAGAGATGTGGTCGAATGGCTCGGA
     HR N nucl.       ACCGGAGGATTGACGACTAATGCACCGCCACAAGGCAGAGATGTGGTCGAATGGCTCGGA
     M2 N nucl.       ACCGGAGGATTGACGACTAATGCACCGCCACAAGGCAGAGATGTGGTCGAATGGCTCGGA
     M3 N nucl.       ACCGGAGGATTGACGACTAATGCACCGCCACAAGGCAGAGATGTGGTCGAATGGCTCGGA
     M4 N nucl.       ACCGGAGGATTGACGACTAATGCACCGCCACAAGGCAGAGATGTGGTCGAATGGCTCGGA


                      1141                                                      1200
GenBank N nucl.       TGGTTTGAAGATCAAAACAGAAAACCGACTCCTGATATGATGCAGTATGCGAAAAGAGCA
     HR N nucl.       TGGTTTGAAGATCAAAACAGAAAACCGACTCCTGATATGATGCAGTATGCGAAACGAGCA
     M2 N nucl.       TGGTTTGAAGATCAAAACAGAAAACCGACTCCTGATATGATGCAGTATGCGAAACGAGCA
     M3 N nucl.       TGGTTTGAAGATCAAAACAGAAAACCGACTCCTGATATGATGCAGTATGCGAAACGAGCA
     M4 N nucl.       TGGTTTGAAGATCAAAACAGAAAACCGACTCCTGATATGATGCAGTATGCGAAACGAGCA


                      1201                                                      1260
GenBank N nucl.       GTCATGTCACTGCAAGGCCTAAGAGAGAAGACAATTGGCAAGTATGCTAAGTCAGAATTT
     HR N nucl.       GTCATGTCACTGCAAGGCCTAAGAGAGAAGACAATTGGCAAGTATGCTAAGTCAGAATTT
     M2 N nucl.       GTCATGTCACTGCAAGGCCTAAGAGAGAAGACAATTGGCAAGTATGCTAAGTCAGAATTT
     M3 N nucl.       GTCATGTCACTGCAAGGCCTAAGAGAGAAGACAATTGGCAAGTATGCTAAGTCAGAATTT
     M4 N nucl.       GTCATGTCACTGCAAGGCCTAAGAGAGAAGACAATTGGCAAGTATGCTAAGTCAGAATTT


                      1261    1269
GenBank N nucl.       GACAAATGA
     HR N nucl.       GACAAATGA
     M2 N nucl.       GACAAATGA
     M3 N nucl.       GACAAATGA
     M4 N nucl.       GACAAATGA
```

FIGURE 14-3

```
            1                                                            60
GenBank N a.a.   MSVTVKRIIDNTVIVPKLPANEDPVEYPADYFRKSKEIPLYINTTKSLSDLRGYVYQGLK
     HR N a.a.   MSVTVKRIIⒶNTVIVPKLPANEDPVEYPADYFRKSKEIPLYINTTKSLSDLRGYVYQGLK
     M3 N a.a.   MSVTVKRIIDNTVIVPKLPANEDPVEYPADYFRKSKEIPLYINTTKSLSDLRGYVYQGLK
     M4 N a.a.   ............................................................

            61                                                           120
GenBank N a.a.   SGNVSIIHVNSYLYGALKDIRGKLDKDWSSFGINIGKAGDTIGIFDLVSLKALDGVLPDG
     HR N a.a.   SGNVSIIHVNSYLYGALKDIRGKLDKDWSSFGINIGKAGDTIGIFDLVSLKALDGVLPDG
     M3 N a.a.   SGNVSIIHVNSYLYGALKDIRGKLDKDWSSFGINIGKAGDTIGIFDLVSLKALDGVLPDG
     M4 N a.a.   ....SIIHVNSYLYGALKDIRGKLDKDWSSFGINIGKAGDTIGIFDLVSLKALDGVLPDG

            121                                                          180
GenBank N a.a.   VSDASRTSADDKWLPLYLLGLYRVGRTQMPEYRKⓀLMDGLTNQCKMINEQFEPLVPEGRD
     HR N a.a.   VSDASRTSADDKWLPLYLLGLYRVGRTQMPEYRKRLMDGLTNQCKMINEQFEPLVPEGRD
     M3 N a.a.   VSDASRTSADDKWLPLYLLGLYRVGRTQMPEYRKRLMDGLTNQCKMINEQFEPLVPEGRD
     M4 N a.a.   VSDASRTSADDKWLPLYLLGLYRVGRTQMPEYRKRLMDGLTNQCKMINEQFEPLVPEGRD

            181                                                          240
GenBank N a.a.   IFDVWGNDSNYTKIVAAVDMFFHMFKKHECASFRYGTIVSRFKDCAALATFGHLCKITGM
     HR N a.a.   IFDVWGNDSNYTKIVAAVDMFFHMFKKHECASFRYGTIVSRFKDCAALATFGHLCKITGM
     M3 N a.a.   IFDVWGNDSNYTKIVAAVDMFFHMFKKHECASFRYGTIVSRFKDCAALATFGHLCKITGM
     M4 N a.a.   IFDVWGNDSNYTKIVAAVDMFFHMFKKHECASFRYGTIVSRFKDCAALATFGHLCKITGM

            241                                                          300
GenBank N a.a.   STEDVTTWILNREVADEMVQMMLPGQEIDKADSYMPYLIDFGLSSKSPYSSVKNPAFHFW
     HR N a.a.   STEDVTTWILNREVADEMVQMMLPGQEIDKADSYMPYLIDFGLSSKSPYSSVKNPAFHFW
     M3 N a.a.   STEDVTTWILNREVADEMVQMMLPGQEIDKADSYMPYLIDFGLSSKSPYSSVKNPAFHFW
     M4 N a.a.   STEDVTTWILNREVADEMVQMMLPGQEIDKADSYMPYLIDFGLSSKSPYSSVKNPAFHFW

            301                                                          360
GenBank N a.a.   GQLTALLLRSTRARNARQPDDIEYTSLTTAGLLYAYAVGSSADLAQQFCVGDⓃKYTPDDS
     HR N a.a.   GQLTALLLRSTRARNARQPDDIEYTSLTTAGLLYAYAVGSSADLAQQFCVGDSKYTPDDS
     M3 N a.a.   GQLTALLLRSTRARNARQPDDIEYTSLTTAGLLYAYAVGSSADLAQQFCVGDSKYTPDDS
     M4 N a.a.   GQLT...............DIEYTSⓍTTAGLLYAYAVGSSADLAⓍQFCVGDSKYTPDDS

            361                                                          420
GenBank N a.a.   TGGLTTNAPPQGRDVVEWLGWFEDQNRKPTPDMMQYAKRAVMSLQGLREKTIGKYAKSEF
     HR N a.a.   TGGLTTNAPPQGRDVVEWLGWFEDQNRKPTPDMMQYAKRAVMSLQGLREKTIGKYAKSEF
     M3 N a.a.   TGGLTTNAPPQGRDVVEWLGWFEDQNRKPTPDMMQYAKRAVMSLQGLREKTIGKYAKSEF
     M4 N a.a.   TGGLTTNAPPQGRDVVEWLGWFEDQNRKPTPDMMQYAKRAVMSLQGLREKTIGKYAKSEF

            421   423
GenBank N a.a.   DK.
     HR N a.a.   DK.
     M3 N a.a.   DK.
     M4 N a.a.   DK.
```

FIGURE 15

```
               1                                                            60
GenBank P nucl.  ATGGATAATCTCACAAAAGTTCGTGAGTATCTCAAGTCCTATTCTCGTCTGGATCAGGCG
     HR P nucl.  ATGGATAATCTCACAAAAGTTCGTGAGTATCTCAAGTCCTATTCTCGTCTAGATCAGGCG
     M2 P nucl.  ATGGATAATCTCACAAAAGTTCGTGAGTATCTCAAGTCCTATTCTCGTCTAGATCAGGCG
     M3 P nucl.  ATGGATAATCTCACAAAAGTTCGTGAGTATCTCAAGTCCTATTCTCGTCTAGATCAGGCG
     M4 P nucl.  ATGGATAATCTCACAAAAGTTCGTGAGTATCTCAAGTCCTATTCTCGTCTAGATCAGGCG

               61                                                           120
GenBank P nucl.  GTAGGAGAGATAGATGAGATCGAAGCACAACGAGCTGAAAAGTCCAATTATGAGTTGTTC
     HR P nucl.  GTAGGAGAGATAGATGAGATCGAAGCACAACGAGCTGAAAAGTCCAATTATGAGTTGTTC
     M2 P nucl.  GTAGGAGAGATAGATGAGATCGAAGCACAACGAGCTGAAAAGTCCAATTATGAGTTGTTC
     M3 P nucl.  GTAGGAGAGATAGATGAGATCGAAGCACAACGAGCTGAAAAGTCCAATTATGAGTTGTTC
     M4 P nucl.  GTAGGAGAGATAGATGAGATCGAAGCACAACGAGCTGAAAAGTCCAATTATGAGTTGTTC

               121                                                          180
GenBank P nucl.  CAAGAGGATGGAGTGGAAGAGCATACTAAGCCCTCTTATTTTCAGGCAGCAGATGATTCT
     HR P nucl.  CAAGAGGACGGAGTGGAAGAGCATACTAGGCCCTCTTATTTTCAGGCAGCAGATGATTCT
     M2 P nucl.  CAAGAGGACGGAGTGGAAGAGCATACTAGGCCCTCTTATTTTCAGGCAGCAGATGATTCT
     M3 P nucl.  CAAGAGGACGGAGTGGAAGAGCATACTAGGCCCTCTTATTTTCAGGCAGCAGATGATTCT
     M4 P nucl.  CAAGAGGACGGAGTGGAAGAGCATACTAGGCCCTCTTATTTTCAGGCAGCAGATGATTCT

               181                                                          240
GenBank P nucl.  GACACAGAATCTGAACCAGAAATTGAAGACAATCAAGGTTTGTATGCACAGGATCCAGAA
     HR P nucl.  GACACAGAATCTGAACCAGAAATTGAAGACAATCAAGGCTTGTATGTACCAGATCCGGAA
     M2 P nucl.  GACACAGAATCTGAACCAGAAATTGAAGACAATCAAGGCTTGTATGTACCAGATCCGGAA
     M3 P nucl.  GACACAGAATCTGAACCAGAAATTGAAGACAATCAAGGCTTGTATGTACCAGATCCGGAA
     M4 P nucl.  GACACAGAATCTGAACCAGAAATTGAAGACAATCAAGGCTTGTATGTACCAGATCCGGAA

               241                                                          300
GenBank P nucl.  GCTGAGCAAGTTGAAGGCTTTATACAGGGGCCTTTAGATGACTATGCAGATGAGGAAGTG
     HR P nucl.  GCTGAGCAAGTTGAAGGCTTTATACAGGGGCCTTTAGATGACTATGCGGATGAGGACGTG
     M2 P nucl.  GCTGAGCAAGTTGAAGGCTTTATACAGGGGCCTTTAGATGACTATGCGGATGAGGACGTG
     M3 P nucl.  GCTGAGCAAGTTGAAGGCTTTATACAGGGGCCTTTAGATGACTATGCGGATGAGGACGTG
     M4 P nucl.  GCTGAGCAAGTTGAAGGCTTTATACAGGGGCCTTTAGATGACTATGCGGATGAGGACGTG

               301                                                          360
GenBank P nucl.  GATGTTGTATTTACTTCGGACTGGAAACCACCTGAGCTTGAATCTGACGAGCATGGAAAG
     HR P nucl.  GATGTTGTATTCACTTCGGACTGGAAACAGCCTGAGCTTGAATCCGACGAGCATGGAAAG
     M2 P nucl.  GATGTTGTATTCACTTCGGACTGGAAACAGCCTGAGCTTGAATCCGACGAGCATGGAAAG
     M3 P nucl.  GATGTTGTATTCACTTCGGACTGGAAACAGCCTGAGCTTGAATCCGACGAGCATGGAAAG
     M4 P nucl.  GATGTTGTATTCACTTCGGACTGGAAACAGCCTGAGCTTGAATCCGACGAGCATGGAAAG

               361                                                          420
GenBank P nucl.  ACCTTACGGTTGACATCGCCAGAGGGTTTAAGTGGAGAGCAGAAATCCCAGTGGCTTTCG
     HR P nucl.  ACCTTACGGTTGACATTGCCAGAGGGTTTAAGTGGAGAGCAGAAATCCCAGTGGCTTTTG
     M2 P nucl.  ACCTTACGGTTGACATTGCCAGAGGGTTTAAGTGGAGAGCAGAAATCCCAGTGGCTTTTG
     M3 P nucl.  ACCTTACGGTTGACATTGCCAGAGGGTTTAAGTGGAGAGCAGAAATCCCAGTGGCTTTTG
     M4 P nucl.  ACCTTACGGTTGACATTGCCAGAGGGTTTAAGTGGAGAGCAGAAATCCCAGTGGCTTTTG
```

FIGURE 16-1

```
            421                                                          480
GenBank P nucl.  ACGATTAAAGCAGTCGTGCAAAGTGCCAAATACTGGAATCTGGCAGAGTGCACATTTGAA
     HR P nucl.  ACGATTAAAGCAGTCGTTCAAAGTGCCAAACACTGGAATCTGGCAGAGTGCACATTTGAA
     M2 P nucl.  ACGATTAAAGCAGTCGTTCAAAGTGCCAAACACTGGAATCTGGCAGAGTGCACATTTGAA
     M3 P nucl.  ACGATTAAAGCAGTCGTTCAAAGTGCCAAACACTGGAATCTGGCAGAGTGCACATTTGAA
     M4 P nucl.  ACGATTAAAGCAGTCGTTCAAAGTGCCAAACACTGGAATCTGGCAGAGTGCACATTTGAA

            481                                                          540
GenBank P nucl.  GCATCGGGAGAAGGGGTCATTATCAAGGAGCGCCAGATAACTCCGGATGTATATAAGGTC
     HR P nucl.  GCATCGGGAGAAGGGGTCATCATAAAAAAGCGCCAGATAACTCCGGATGTATATAAGGTC
     M2 P nucl.  GCATCGGGAGAAGGGGTCATCATAAAAAAGCGCCAGATAACTCCGGATGTATATAAGGTC
     M3 P nucl.  GCATCGGGAGAAGGGGTCATCATAAAAAAGCGCCAGATAACTCCGGATGTATATAAGGTC
     M4 P nucl.  GCATCGGGAGAAGGGGTCATCATAAAAAAGCGCCAGATAACTCCGGATGTATATAAGGTC

            541                                                          600
GenBank P nucl.  ACTCCAGTGATGAACACACATCCGTCCCAATCAGAAGCAGTATCAGATGTTTGGTCTCTC
     HR P nucl.  ACTCCAGTGATGAACACACATCCGTCCCAATCAGAAGCCGTATCAGATGTTTGGTCTCTC
     M2 P nucl.  ACTCCAGTGATGAACACACATCCGTCCCAA..............................
     M3 P nucl.  ACTCCAGTGATGAACACACATCCGTCCCAATCGGAAGCCGTATCAGATGTTTGGTCTCTC
     M4 P nucl.  ACTCCAGTGATGAACACACATCCGTCCCAATCAGAAGCCGTATCAGATGTTTGGTCTCTC

            601                                                          660
GenBank P nucl.  TCAAAGACATCCATGACTTTCCAACCCAAGAAAGCAAGTCTTCAGCCTCTCACCATATCC
     HR P nucl.  TCAAAGACATCCATGACTTTCCAACCCAAGAAAGCAAGTCTTCAGCCTCTCACCATATCC
     M2 P nucl.  ............................................................
     M3 P nucl.  TCAAAGACATCCATGACTTTCCAACCCAAGAAAGCAAGTCTTCAGCCTCTCACCATATCC
     M4 P nucl.  TCAAAGACATCCATGACTTTCCAACCCAAGAAAGCAAGTCTTCAGCCTCTCACCATATCC

            661                                                          720
GenBank P nucl.  TTGGATGAATTGTTCTCATCTAGAGGAGAGTTCATCTCTGTCGGAGGTGACGGACGAATG
     HR P nucl.  TTGGATGAATTGTTCTCATCTAGAGGAGAATTCATCTCTGTCGGAGGTAACGGACGAATG
     M2 P nucl.  ............................................................
     M3 P nucl.  TTGGATGAATTGTTCTCATCTAGAGGAGAATTCATCTCTGTCGGAGGTAACGGACGAATG
     M4 P nucl.  TTGGATGAATTGTTCTCATCTAGAGGAGAATTCATCTCTGTCGGAGGTAACGGACGAATG

            721                                                          780
GenBank P nucl.  TCTCATAAAGAGGCCATCCTGCTCGGCCTGAGATACAAAAAGTTGTACAATCAGGCGAGA
     HR P nucl.  TCTCATAAAGAGGCCATCCTGCTCGGTCTGAGGTACAAAAAGTTGTACAATCAGGCGAGA
     M2 P nucl.  ............................................................
     M3 P nucl.  TCTCATAAAGAGGCCATCCTGCTCGGTCTGAGGTACAAAAAGTTGTACAATCAGGCGAGA
     M4 P nucl.  TCTCATAAAGAGGCCATCCTGCTCGGTCTGAGGTACAAAAAGTTGTACAATCAGGCGAGA

            781        798
GenBank P nucl.  GTCAAATATTCTCTGTAG
     HR P nucl.  GTCAAATATTCTCTGTAG
     M2 P nucl.  ..................
     M3 P nucl.  GTCAAATATTCTCTGTAG
     M4 P nucl.  GTCAAATATTCTCTGTAG
```

FIGURE 16-2

```
                 1                                                            60
GenBank P a.a.   MDNLTKVREYLKSYSRLDQAVGEIDEIEAQRAEKSNYELFQEDGVEEHTKPSYFQAADDS
     HR P a.a.   MDNLTKVREYLKSYSRLDQAVGEIDEIEAQRAEKSNYELFQEDGVEEHTRPSYFQAADDS
     M2 P a.a.   MDNLTKVREYLKSYSRLDQAVGEIDEIEAQRAEKSNYELFQEDGVEEHTRPSYFQAADDS
     M3 P a.a.   MDNLTKVREYLKSYSRLDQAVGEIDEIEAQRAEKSNYELFQEDGVEEHTRPSYFQAADDS
     M4 P a.a.   MDNLTKVREYLKSYSRLDQAVGEIDEIEAQRAEKSNYELFQEDGVEEHTRPSYFQAADDS


                 61                                                           120
GenBank P a.a.   DTESEPEIEDNQGLYAQDPEAEQVEGFIQGPLDDYADEEVDVVFTSDWKPPELESDEHGK
     HR P a.a.   DTESEPEIEDNQGLYVPDPEAEQVEGFIQGPLDDYADEDVDVVFTSDWKQPELESDEHGK
     M2 P a.a.   DTESEPEIEDNQGLYVPDPEAEQVEGFIQGPLDDYADEDVDVVFTSDWKQPELESDEHGK
     M3 P a.a.   DTESEPEIEDNQGLYVPDPEAEQVEGFIQGPLDDYADEDVDVVFTSDWKQPELESDEHGK
     M4 P a.a.   DTESEPEIEDNQGLYVPDPEAEQVEGFIQGPLDDYADEDVDVVFTSDWKQPELESDEHGK


                 121                                                          180
GenBank P a.a.   TLRLTSPEGLSGEQKSQWLSTIKAVVQSAKYWNLAECTFEASGEGVIMKERQITPDVYKV
     HR P a.a.   TLRLTLPEGLSGEQKSQWLLTIKAVVQSAKHWNLAECTFEASGEGVIIKKRQITPDVYKV
     M2 P a.a.   TLRLTLPEGLSGEQKSQWLLTIKAVVQSAKHWNLAECTFEASGEGVIIKKRQITPDVYKV
     M3 P a.a.   TLRLTLPEGLSGEQKSQWLLTIKAVVQSAKHWNLAECTFEASGEGVIIKKRQITPDVYKV
     M4 P a.a.   TLRLTLPEGLSGEQKSQWLLTIKAVVQSAKHWNLAECTFEASGEGVIIKKRQITPDVYKV


                 181                                                          240
GenBank P a.a.   TPVMNTHPSQSEAVSDVWSLSKTSMTFQPKKASLQPLTISLDELFSSRGEFISVGGDGRM
     HR P a.a.   TPVMNTHPSQSEAVSDVWSLSKTSMTFQPKKASLQPLTISLDELFSSRGEFISVGGNGRM
     M2 P a.a.   TPVMNTHPSQ..................................................
     M3 P a.a.   TPVMNTHPSQSEAVSDVWSLSKTSMTFQPKKASLQPLTISLDELFSSRGEFISVGGNGRM
     M4 P a.a.   TPVMNTHPSQSEAVSDVWSLSKTSMTFQPKKASLQPLTISLDELFSSRGEFISVGGNGRM


                 241                    266
GenBank P a.a.   SHKEAILLGLRYKKLYNQARVKYSL
     HR P a.a.   SHKEAILLGLRYKKLYNQARVKYSL
     M2 P a.a.   .........................
     M3 P a.a.   SHKEAILLGLRYKKLYNQARVKYSL
     M4 P a.a.   SHKEAILLGLRYKKLYNQARVKYSL
```

FIGURE 17

```
                    1                                                          60
GenBank M nucl.     ATGAGTTCCTTAAAGAAGATTCTCGGTCTGAAGGGGAAAGGTAAGAAATCTAAGAAATTA
     HR M nucl.     ATGAGTTCCTTAAAGAAGATTCTCGGTCTGAAGGGGAAAGGTAAGAAATCTAAGAAATTA
     M3 M nucl.     ATGAGTTCCTTAAAGAAGATTCTCGGTCTGAAGGGGAAAGGTAAGAAATCTAAGAAATTA
     M4 M nucl.     ·ATGAGTTCCTTAAAGAAGATTCTCGGTCTGAAGGGGAAAGGTAAGAAATCTAAGAAATTA

                    61                                                         120
GenBank M nucl.     GGGATCGCACCACCCCCTTATGAAGAGGACACTAGCATGGAGTATGCTCCGAGCGCTCCA
     HR M nucl.     GGGATCGCACCACCCCCTTATGAAGAGGACACTAACATGGAGTATGCTCCGAGCGCTCCA
     M3 M nucl.     GGGATCGCACCACCCCCTTATGAAGAGGACACTAACATGGAGTATGCTCCGAGCGCTCCA
     M4 M nucl.     GGGATCGCACCACCCCCTTATGAAGAGGACACTAACATGGAGTATGCTCCGAGCGCTCCA

                    121                                                        180
GenBank M nucl.     ATTGACAAATCCTATTTTGGAGTTGACGAGATGGACACCTATGATCCGAATCAATTAAGA
     HR M nucl.     ATTGACAAATCCTATTTTGGAGTTGACGAGATGGACACTCATGATCCGCATCAATTAAGA
     M3 M nucl.     ATTGACAAATCCTATTTTGGAGTTGACGAGAGGGACACTCATGATCCGCATCAATTAAGA
     M4 M nucl.     ATTGACAAATCCTATTTTGGAGTTGACGAGATGGACACTCATGATCCGCATCAATTAAGA

                    181                                                        240
GenBank M nucl.     TATGAGAAATTCTTCTTTACAGTGAAAATGACGGTTAGATCTAATCGTCCGTTCAGAACA
     HR M nucl.     TATGAGAAATTCTTCTTTACAGTGAAAATGACGGTTAGATCTAATCGTCCGTTCAGAACA
     M3 M nucl.     TATGAGAAATTCTTCTTTACAGTGAAAATGACGGTTAGATCTAATCGTCCGTTCAGAACA
     M4 M nucl.     TATGAGAAATTCTTCTTTACAGTGAAAATGACGGTTAGATCTAATCGTCCGTTCAGAACA·

                    241                                                        300
GenBank M nucl.     TACTCAGATGTGGCAGCCGCTGTATCCCATTGGGATCACATGTACATCGGAATGGCAGGG
     HR M nucl.     TACTCAGATGTGGCAGCCGCTGTATCCCATTGGGATCACATGTACATCGGAATGGCAGGG
     M3 M nucl.     TACTCAGATGTGGCAGCCGCTGTATCCCATTGGGATCACATGTACATCGGAATGGCAGGG
     M4 M nucl.     TACTCAGATGTGGCAGCCGCTGTATCCCATTGGGATCACATGTACATCGGAATGGCAGGG

                    301                                                        360
GenBank M nucl.     AAACGTCCCTTCTACAAAATCTTGGCTTTTTTTGGGTTCTTCTAATCTAAAGGCCACTCCA
     HR M nucl.     AAACGTCCCTTCTACAAGATCTTGGCTTTTTTTGGGTTCTTCTAATCTAAAGGCCACTCCA
     M3 M nucl.     AAACGTCCCTTCTACAAGATCTTGGCTTTTTTTGGGTTCTTCTAATCTAAAGGCCACTCCA
     M4 M nucl.     AAACGTCCCTTCTACAAGATCTTGGCTTTTTTTGGGTTCTTCTAATCTAAAGGCCACTCCA

                    361                                                        420
GenBank M nucl.     GCGGTATTGGCAGATCAAGGTCAACCAGAGTATCACACTCACTGCGAAGGCAGGGCTTAT
     HR M nucl.     GCGGTATTGGCAGATCAAGGTCAACCAGAGTATCACGCTCACTGTGAAGGCAGGGCTTAT
     M3 M nucl.     GCGGTATTGGCAGATCAAGGTCAACCAGAGTATCACGCTCACTGTGAAGGCAGGGCTTAT
     M4 M nucl.     GCGGTATTGGCAGATCAAGGTCAACCAGAGTATCACGCTCACTGTGAAGGCAGGGCTTAT

                    421                                                        480
GenBank M nucl.     TTGCCACACTAGGATGGGGAAGACCCCTCCCATGCTCAATGTACCAGAGCACTTCAGAAGA
     HR M nucl.     ·TTGCCACACAGAATGGGGAAGACCCCTCCCATGCTCAATGTACCAGAGCACTTCAGAAGA
     M3 M nucl.     TTGCCACACAGAATGGGGAAGACCCCTCCCATGCTCAATGTACCAGAGCACTTCAGAAGA
     M4 M nucl.     TTGCCACACAGAATGGGGAAGACCCCTCCCATGCTCAATGTACCAGAGCACTTCAGAAGA

                    481                                                        540
GenBank M nucl.     CCATTCAATATAGGTCTTTACAAGGGAACGATTGAGCTCACAATGACCATCTACGATGAT
     HR M nucl.     CCATTCAATATAGGTCTTTACAAGGGAACGGTTGAGCTCACAATGACCATCTACGATGAT
    ·M3 M nucl.     CCATTCAATATAGGTCTTTACAAGGGAACGGTTGAGCTCACAATGACCATCTACGATGAT
     M4 M nucl.     CCATTCAATATAGGTCTTTACAAGGGAACGGTTGAGCTCACAATGACCATCTACGATGAT
```

FIGURE 18-1

```
          541                                                       600
GenBank M nucl.   GAGTCACTGGAAGCAGCTCCTATGATCTGGGATCATTTCAATTCTTCCAAATTTTCTGAT
    HR  M nucl.   GAGTCACTGGAAGCAGCTCCTATGATCTGGGATCATTTCAATTCTTCCAAATTTTCTGAT
    M3  M nucl.   GAGTCACTGGAAGCAGCTCCTATGATCTGGGATCATTTCAATTCTTCCAAATTTTCTGAT
    M4  M nucl.   GAGTCACTGGAAGCAGCTCCTATGATCTGGGATCATTTCAATTCTTCCAAATTTTCTGAT

          601                                                       660
GenBank M nucl.   TTCAGAGAGAAGGCCTTAATGTTTGGCCTGATTGTCGAGAAAAAGGCATCTGGAGC[G]TGG
    HR  M nucl.   TTCAGAGAGAAGGCCTTAATGTTTGGCCTGATTGTCGAGAAAAAGGCATCTGGAGCTTGG
    M3  M nucl.   TTCAGAGAGAAGGCCTTAATGTTTGGCCTGATTGTCGAGAAAAAGGCATCTGGAGCTTGG
    M4  M nucl.   TTCAGAGAGAAGGCCTTAATGTTTGGCCTGATTGTCGAGAAAAAGGCATCTGGAGCTTGG

          661                          690
GenBank M nucl.   GTCCTGGATTCT[A]TCAGCCACTTCAAATGA
    HR  M nucl.   GTCCTGGATTCTGTCAGCCACTTCAAATGA
    M3  M nucl.   GTCCTGGATTCTGTCAGCCACTTCAAATGA
    M4  M nucl.   GTCCTGGATTCTGTCAGCCACTTCAAATGA
```

FIGURE 18-2

```
              1                                                          60
GenBank M a.a.  MSSLKKILGLKGKGKKSKKLGIAPPPYEEDTSMEYAPSAPIDKSYFGVDEMDTYDPNQLR
     HR M a.a.  MSSLKKILGLKGKGKKSKKLGIAPPPYEEDTNMEYAPSAPIDKSYFGVDEMDTHDPHQLR
     M4 M a.a.  MSSLKKILGLKGKGKKSKKLGIAPPPYEEDTNMEYAPSAPIDKSYFGVDEMDTHDPHQLR
     M3 M a.a.  MSSLKKILGLKGKGKKSKKLGIAPPPYEEDTNMEYAPSAPIDKSYFGVDERDTHDPHQLR

              61                                                        120
GenBank M a.a.  YEKFFFTVKMTVRSNRPFRTYSDVAAAVSHWDHMYIGMAGKRPFYKILAFLGSSNLKATP
     HR M a.a.  YEKFFFTVKMTVRSNRPFRTYSDVAAAVSHWDHMYIGMAGKRPFYKILAFLGSSNLKATP
     M4 M a.a.  YEKFFFTVKMTVRSNRPFRTYSDVAAAVSHWDHMYIGMAGKRPFYKILAFLGSSNLKATP
     M3 M a.a.  YEKFFFTVKMTVRSNRPFRTYSDVAAAVSHWDHMYIGMAGKRPFYKILAFLGSSNLKATP

              121                                                       180
GenBank M a.a.  AVLADQGQPEYHTHCEGRAYLPHRMGKTPPMLNVPEHFRRPFNIGLYKGTTELTMTIYDD
     HR M a.a.  AVLADQGQPEYHAHCEGRAYLPHRMGKTPPMLNVPEHFRRPFNIGLYKGTVELTMTIYDD
     M4 M a.a.  AVLADQGQPEYHAHCEGRAYLPHRMGKTPPMLNVPEHFRRPFNIGLYKGTVELTMTIYDD
     M3 M a.a.  AVLADQGQPEYHAHCEGRAYLPHRMGKTPPMLNVPEHFRRPFNIGLYKGTVELTMTIYDD

              181                         230
GenBank M a.a.  ESLEAAPMIWDHFNSSKFSDFREKALMFGLIVEKKASGAWVLDSISHFK.
     HR M a.a.  ESLEAAPMIWDHFNSSKFSDFREKALMFGLIVEKKASGAWVLDSVSHFK.
     M4 M a.a.  ESLEAAPMIWDHFNSSKFSDFREKALMFGLIVEKKASGAWVLDSVSHFK.
     M3 M a.a.  ESLEAAPMIWDHFNSSKFSDFREKALMFGLIVEKKASGAWVLDSVSHFK.
```

FIGURE 19

```
              1                                                          60
GenBank G nucl.  ATGAAGTGCCTTTTGTACTTAGCCTTTTTATTCATTGGGGTGAATTGCAAGTTCACCATA
     HR G nucl.  ATGAAGTGCCTTTTGKACTTAGCTTTTTTATTCATCGGGGTGAATTGCAAGTTCACCATA
     M2 G nucl.  ............................................................
     M3 G nucl.  ATGAAGTGCCTTTTGTACTTAGCTTTTTTATTCATCGGGGTGAATTGCAAGTTCACCATA
     M4 G nucl.  ATGAAGTGCCTTTTGTACTTAGCTTTTTTATTCATCGGGGTGAATTGCAAGTTCACCATA

              61                                                         120
GenBank G nucl.  GTTTTTCCACACAACCAAAAAGGAAACTGGAAAAATGTTCCTTCTAATTACCATTATTGC
     HR G nucl.  GTTTTTCCATACAACCAAAAAGGAAACTGGAAAAATGTTCCTTCCAATTACCATTATTGC
     M2 G nucl.  ............................................................
     M3 G .nucl.  GTTTTTCCATACAACCGAAAAGGAAACTGGAAAAATGTTCCTTCCAATTACCATTATTGC
     M4 G nucl.  GTTTTTCCATACAACCAAAAAGGAAACTGGAAAAATGTTCCTTCCAATTACCATTATTGC

              121                                                        180
GenBank G nucl.  CCGTCAAGCTCAGATTTAAATTGGCATAATGACTTAATAGGCACAGCCATACAAGTCAAA
     HR G nucl.  CCGTCAAGCTCAGATTTAAATTGNCATAATGACTTAATAGGCACAGCCTTACAAGTCAAA
     M2 G nucl.  ............................................................
     M3 G nucl.  CCGTCAAGCTCAGATTTAAATTGGCATAATGACTTAATAGGCACAGCCTTACAAGTCAAA
     M4 G nucl.  CCGTCAAGCTCAGATTTAAATTGGCATAATGACTTAATAGGCACAGCCTTACAGGTCAAA

              181                                                        240
GenBank G nucl.  ATGCCCAAGAGTCACAAGGCTATTCAAGCAGACGGTTGGATGTGTCATGCTTCCAAATGG
     HR G nucl.  ATGCCCAAGAGTCACAAGGCTATTCAAGCAGACGGTTGGATGTGTCATGCTTCCAAATGG
     M2 G nucl.  ............................................................
     M3 G nucl.  ATGCCCAAGAGTCACAAGGCTATTCAAGCAGACGGTTGGATGTGTCATGCTTCCAAATGG
     M4 G nucl.  ATGCCCAAGAGTCACAAGGCTATTCAAGCAGACGGTTGGATGTGTCATGCTTCCAAATGG

              241                                                        300
GenBank G nucl.  GTCACTACTTGTGATTTCCGCTGGTATGGACCGAAGTATATAACACAGTCCATCCGATCC
     HR G nucl.  GTCACTACTTGTGATTTCCGCTGGTACGGACCGAAGTATATAACACATTCCATCCGATCC
     M2 G nucl.  ............................................................
     M3 G nucl.  GTCACTACTTGTGATTTCCGCTGGTACGGACCGAAGTATATAACACATTCCATCCGATCC
     M4 G nucl.  GTCACTACTTGTGATTTCCGCTGGTACGGACCGAAGTATATAACACATTCCATCCGATCC

              301                                                        360
GenBank G nucl.  TTCACTCCATCTGTAGAACAATGCAAGGAAAGCATTGAACAAACGAAACAAGGAACTTGG
     HR G nucl.  TTCACTCCATCTGTAGAACAATGCAAGGAAAGCATTGAACAAACGAAACAAGGAACTTGG
     M2 G nucl.  ............................................................
     M3 G nucl.  TTCACTCCATCTGTAGAACAATGCAAGGAAAGCATTGAACAAACGAAACAAGGAACTTGG
     M4 G nucl.  TTCACTCCATCTGTAGAACAATGCAAGGAAAGCATTGAACAAACGAAACAAGGAACTTGG

              361                                                        420
GenBank G nucl.  CTGAATCCAGGCTTCCCTCCTCAAAGTTGTGGATATGCAACTGTGACGGATGCCGAAGCA
     HR G nucl.  CTGAATCCAGGCTTCCCTCCTCAAAGTTGTGGATATGCAACTGTGACGGATGCTGAAGCA
     M2 G nucl.  ............................................................
     M3 G nucl.  CTGAATCCAGGCTTCCCTCCTCAAAGTTGTGGATATGCAACTGTGACGGATGCTGAAGCA
     M4 G nucl.  CTGAATCCAGGCTTCCCTCCTCAAAGTTGTGGATATGCAACTGTGACGGATGCTGAAGCA

              421                                                        480
GenBank G nucl.  GTGATTGTCCAGGTGACTCCTCACCATGTGCTGGTTGATGAATACACAGGAGAATGGGTT
     HR G nucl.  GCGATTGTCCAGGTGACTCCTCACCATGTGCTTGTTGATGAATACACAGGAGAATGGGTT
     M2 G nucl.  ............................................................
     M3 G nucl.  GCGATTGTCCAGGTGACTCCTCACCATGTGCTTGTTGATGAATACACAGGAGAATGGGTT
     M4 G nucl.  GCGATTGTCCAGGTGACTCCTCACCATGTGCTTGTTGATGAATACACAGGAGAATGGGTT
```

FIGURE 20-1

```
                481                                                       540
GenBank G nucl. GATTCACAGTTCATCAACGGAAAATGCAGCAATTACATATGCCCCACTGTCCATAACTCT
     HR G nucl. GATTCACAGTTCATCAACGGAAAATGCAGCAATGACATATGCCCCACTGTCCATAACTCC
     M2 G nucl. ............................................................
     M3 G nucl. GATTCACAGTTCATCAACGGAAAATGCAGCAATGACATATGCCCCACTGTCCATAACTCC
     M4 G nucl. GATTCACAGTTCATCAACGGAAAATGCAGCAATGACATATGCCCCACTGTCCATAACTCC

                541                                                       600
GenBank G nucl. ACAACCTGGCATTCTGACTATAAGGTCAAAGGGCTATGTGATTCTAACCTCATTTCCATG
     HR G nucl. ACAACCTGGCATTCCGACTATAAGGTCAAAGGGCTATGTGATTCTAACCTCATTTCCATG
     M2 G nucl. ............................................................
     M3 G nucl. ACAACCTGGCATTCCGACTATAAGGTCAAAGGGCTATGTGATTCTAACCTCATTTCCATG
     M4 G nucl. ACAACCTGGCATTCCGACTATAAGGTCAAAGGGCTATGTGATTCTAACCTCATTTCCATG

                601                                                       660
GenBank G nucl. GACATCACCTTCTTCTCAGAGGACGGAGAGCTATCATCCCTGGGAAAGGAGGGCACAGGG
     HR G nucl. GACATCACCTTCTTCTCAGAGGACGGAGAGCTATCATCCCTAGGAAAGGAGGGCACAGGG
     M2 G nucl. ............................................................
     M3 G nucl. GACATCACCTTCTTCTCAGAGGACGGAGAGCTATCATCCCTAGGAAAGGAGGGCACAGGG
     M4 G nucl. GACATCACCTTCTTCTCAGAGGACGGAGAGCTATCATCCCTAGGAAAGGAGGGCACAGGG

                661                                                       720
GenBank G nucl. TTCAGAAGTAACTACTTTGCTTATGAAACTGGAGGCAAGGCCTGCAAAATGCAATACTGC
     HR G nucl. TTCAGAAGTAACTACTTTGCTTATGAAACTGGAGACAAGGCCTGCAAAATGCAGTACTGC
     M2 G nucl. ............................................................
     M3 G nucl. TTCAGAAGTAACTACTTTGCTTATGAAACTGGAGACAAGGCCTGCAAAATGCAGTACTGC
     M4 G nucl. TTCAGAAGTAACTACTTTGCTTATGAAACTGGAGACAAGGCCTGCAAAATGCAGTACTGC

                721                                                       780
GenBank G nucl. AAGCATTGGGGAGTCAGACTCCCATCAGGTGTCTGGTTCGAGATGGCTGATAAGGATCTC
     HR G nucl. AAGCGTTGGGGAGTCAGACTCCCATCAGGTGTCTGGTTCGAGATGGCTGATAAGGATCTC
     M2 G nucl. ............................................................
     M3 G nucl. AAGCATTGGGGAGTCAGACTCCCATCAGGTGTCTGGTTCGAGATGGCTGATAAGGATCTC
     M4 G nucl. AAGCGTTGGGGAGTCAGACTCCCATCAGGTGTCTGGTTCGGGATGGCTGATAAGGATCTC

                781                                                       840
GenBank G nucl. TTTGCTGCAGCCAGATTCCCTGAATGCCCAGAAGGGTCAAGTATCTCTGCTCCATCTCAG
     HR G nucl. TTTGCTGCAGCCAGATTCCCTGAATGCCCAGAAGGGTCAAGTATCTCTGCTCCATCTCAG
     M2 G nucl. ...................................................CCATCTCAG
     M3 G nucl. TTTGCTGCAGCCAGATTCCCTGAATGCCCAGAAGGGTCAAGTATCTCTGCTCCATCTCAG
     M4 G nucl. TTTGCTGCAGCCAGATTCCCTGAATGCCCAGAAGGGTCAAGTATCTCTGCTCCATCTCAG

                841                                                       900
GenBank G nucl. ACCTCAGTGGATGTAAGTCTAATTCAGGACGTTGAGAGGATCTTGGATTATTCCCTCTGC
     HR G nucl. ACCTCAGTGGATGTAAGTCTCATTCAGGACGTTGAGAGGATCTTG...............
     M2 G nucl. ACCTCAGTGGATGTAAGTCTCATTCAGGACGTTGAGAGGATCTTGGATTATTCCCTCTGC
     M3 G nucl. ACCTCAGTGGATGTAAGTCTCATTCAGGACGTTGAGAGGATCTTGGATTATTCCCTCTGC
     M4 G nucl. ACCTCAGTGGATGTAAGTCTCATTCAGGACGTTGAGAGGATCT................
```

FIGURE 20-2

```
                  901                                                      960
GenBank G nucl.   CAAGAAACCTGGAGCAAAATCAGAGCGGGTCTTCCAATCTCTCCAGTGGATCTCAGCTAT
     HR G nucl.   ............................................................
     M2 G nucl.   CAAGAAACCTGGAGCAAAATCAGAGCGGGTCTTCCCATCTCTCCAGTGGATCTCAGCTAT
     M3 G nucl.   CAAGAAACCTGGAGCAAAATCAGAGCGGGTCTTCCCATCTCTCCAGTGGATCTCAGCTAT
     M4 G nucl.   ............................................................

                  961                                                     1020
GenBank G nucl.   CTTGCTCCTAAAAACCCAGGAACCGGTCCTGCTTTCACCATAATCAATGGTACCCTAAAA
     HR G nucl.   ............................................................
     M2 G nucl.   CTTGCTCCTAAAAACCCAGGAACCGGTCCTGTCTTTACCATAATCAATGGTACCCTAAAA
     M3 G nucl.   CTTGCTCCTAAAAACCCAGGAACCGGTCCTGCTTTCACCATAATCAATGGTACCCTAAAA
     M4 G nucl.   ............................................................

                  1021                                                    1080
GenBank G nucl.   TACTTTGAGACCAGATACATCAGAGTCGATATTGCTGCTCCAATCCTCTCAAGAATGGTC
     HR G nucl.   ............................................................
     M2 G nucl.   TACTTTGAGACCAGATACATCAGAGTCGATATTGCTGCTCCAATCCTCTCAAGAATGGTC
     M3 G nucl.   TACTTTGAGACCAGATACATCAGAGTCGATATTGCTGCTCCAATCCTCTCAAGAATGGTC
     M4 G nucl.   TACTTTGAGACCAGATACATCAGAGTCGATATTGCTGCTCCAATCCTCTCAAGAATGGTC

                  1081                                                    1140
GenBank G nucl.   GGAATGATCAGTGGAACTACCACAGAAAGGGAACTGTGGGATGACTGGGCACCATATGAA
     HR G nucl.   ............................................................
     M2 G nucl.   GGAATGATCAGTGGAACTACCACAGAAAGGGAACTGTGGGATGACTGGGCTCCATATGAA
     M3 G nucl.   GGAATGATCAGTGGAACTACCACAGAAAGGGAACTGTGGGATGACTGGGCTCCATATGAA
     M4 G nucl.   GGAATGATCAGTGGAACTACCACAGAAAGGGAACTGTGGGATGACTGGGCTCCATATGAA

                  1141                                                    1200
GenBank G nucl.   GACGTGGAAATTGGACCCAATGGAGTTCTGAGGACCAGTTCAGGATATAAGTTTCCTTTA
     HR G nucl.   ............................................................
     M2 G nucl.   GACGTGGAAATTGGACCCAATGGAGTTCTGAGGACCAGTTCAGGATATAAGTTTCCTTTA
     M3 G nucl.   GACGTGGAAATTGGACCCAATGGAGTTCTGAGGACCAGTTCAGGATATAAGTTTCCTTTA
     M4 G nucl.   GACGTGGAAATTGGACCCAATGGAGTTCTGAGGACCAGTTCAGGATATAAGTTTCCTTTA

                  1201                                                    1260
GenBank G nucl.   TACATGATTGGACATGGTATGTTGGACTCCGATCTTCATCTTAGCTCAAAGGCTCAGGTG
     HR G nucl.   ............................................................
     M2 G nucl.   TATATGATTGGACATGGTATGTTGGACTCCGATCTTCATCTTAGCTCAAAGGCTCAGGTG
     M3 G nucl.   TATATGATTGGACATGGTATGTTGGACTCCGATCTTCATCTTAGCTCAAAGGCTCAGGTG
     M4 G nucl.   TATATGATTGGACATGGTATGTTGGACTCCGATCTTCATCTTAGCTCAAAGGCTCAGGTG

                  1261                                                    1320
GenBank G nucl.   TTCGAACATCCTCACATTCAAGACGCTGCTTCGCAACTTCCTGATGATGAGAGTTTATTT
     HR G nucl.   ............................................................
     M2 G nucl.   TTTGAACATCCTCACATTCAAGACGCTGCTTCGCAGCTTCCTGATGATGAGACTTTATTT
     M3 G nucl.   TTTGAACATCCTCACATTCAAGACGCTGHTGCGCAGCTTCCTGATGATGAGACTTTATTT
     M4 G nucl.   TTTGAACATCCTCACATTCAAGACGCTGCTTCGCAGCTTCCTGATGATGAGACTTTATTT
```

FIGURE 20-3

```
             1321                                                        1380
GenBank G nucl.  TTTGGTGATACTGGGCTATCCAAAAATCCAATCGAGCTTGTAGAAGGTTGGTTCAGTAGT
   HR G nucl.  ............................................................
   M2 G nucl.  TTTGGTGATACTGGGCTATCCAAAAATCCAATCGAGTTTGTAGAAGGTTGGTTCAGTAGT
   M3 G nucl.  TTTGGTGATACTGGGCTATCCAAAAATCCAATCGAGTTTGTAGAAGGTTGGTTCAGTAGT
   M4 G nucl.  TTTGGTGATACTGGGCTATCCAAAAATCCAATCGAGTTTGTAGAAGGTTGGTTCAGTAGT

             1381                                                        1440
GenBank G nucl.  TGGAAAAGCTCTATTGCCTCTTTTTTCTTTATCATAGGGTTAATCATTGGACTATTCTTG
   HR G nucl.  ............................................................
   M2 G nucl.  TGGAAGAGCTCTATTGCCTCTTTTTTCTTTATCATAGGGTTAATCATTGGACTATTCTTG
   M3 G nucl.  TGGAAGAGCTCTATTGCCTCTTTTTTCTTTATCATAGGGTTAATCATTGGACTATTCTTG
   M4 G nucl.  TGGAAGAGCTCTATTGCCTCTTTTTTCTTTATCATAGGGTTAATCATTGGACTATTCTTG


             1441                                                        1500
GenBank G nucl.  GTTCTCCGAGTTGGTATCCATCTTTGCATTAAATTAAAGCACACCAAGAAAAGACAGATT
   HR G nucl.  ............................................................
   M2 G nucl.  GTTCTCCGAGTTGGTATTTATCTTTGCATTAAATTAAAGCACACCAAGAAAAGACAGATT
   M3 G nucl.  GTTCTCCGAGTTGGTATTTATCTTTGCATTAAATTAAAGCACACCAAGAAAAGACAGATT
   M4 G nucl.  GTTCTCCGAGTTGGTATTTATCTTTGCATTAAATTAAAGCACACCAAGAAAAGACAGATT

             1501                    1536
GenBank G nucl.  TATACAGACATAGAGATGAACCGACTTGGAAAGTAA
   HR G nucl.  ....................................
   M2 G nucl.  TATACAGACATAGAGATGAACCGACTTGGGAAGTAA
   M3 G nucl.  TATACAGACATAGAGATGAACCGACTTGGGAAGTAA
   M4 G nucl.  TATACAGACATAGAGATGAACCGACTTGGGAAGTAA
```

FIGURE 20-4

```
                         1                                                          60
GenBank G a.a.   MKCLLYLAFLFIGVNCKFTIVFP░NQKGNWKNVPSNYHYCPSSSDLNWHNDLIGTA░QVK
        HR G a.a.   MKCLL░LAFLFIGVNCKFTIVFPYNQKGNWKNVPSNYHYCPSSSDLN░HNDLIGTALQVK
        M2 G a.a.   ............................................................
        M3 G a.a.   MKCLLYLAFLFIGVNCKFTIVFPYN░KGNWKNVPSNYHYCPSSSDLNWHNDLIGTALQVK
        M4 G a.a.   MKCLLYLAFLFIGVNCKFTIVFPYNQKGNWKNVPSNYHYCPSSSDLNWHNDLIGTALQVK

                         61                                                         120
GenBank G a.a.   MPKSHKAIQADGWMCHASKWVTTCDFRWYGPKYIT░SIRSFTPSVEQCKESIEQTKQGTW
        HR G a.a.   MPKSHKAIQADGWMCHASKWVTTCDFRWYGPKYITHSIRSFTPSVEQCKESIEQTKQGTW
        M2 G a.a.   ............................................................
        M3 G a.a.   MPKSHKAIQADGWMCHASKWVTTCDFRWYGPKYITHSIRSFTPSVEQCKESIEQTKQGTW
        M4 G a.a.   MPKSHKAIQADGWMCHASKWVTTCDFRWYGPKYITHSIRSFTPSVEQCKESIEQTKQGTW

                         121                                                        180
GenBank G a.a.   LNPGFPPQSCGYATVTDAEA░IVQVTPHHVLVDEYTGEWVDSQFINGKCSN░ICPTVHNS
        HR G a.a.   LNPGFPPQSCGYATVTDAEAAIVQVTPHHVLVDEYTGEWVDSQFINGKCSNDICPTVHNS
        M2 G a.a.   ............................................................
        M3 G a.a.   LNPGFPPQSCGYATVTDAEAAIVQVTPHHVLVDEYTGEWVDSQFINGKCSNDICPTVHNS
        M4 G a.a.   LNPGFPPQSCGYATVTDAEAAIVQVTPHHVLVDEYTGEWVDSQFINGKCSNDICPTVHNS

                         181                                                        240
GenBank G a.a.   TTWHSDYKVKGLCDSNLISMDITFFSEDGELSSLGKEGTGFRSNYFAYETG░KACKMQYC
        HR G a.a.   TTWHSDYKVKGLCDSNLISMDITFFSEDGELSSLGKEGTGFRSNYFAYETGDKACKMQYC
        M2 G a.a.   ............................................................
        M3 G a.a.   TTWHSDYKVKGLCDSNLISMDITFFSEDGELSSLGKEGTGFRSNYFAYETGDKACKMQYC
        M4 G a.a.   TTWHSDYKVKGLCDSNLISMDITFFSEDGELSSLGKEGTGFRSNYFAYETGDKACKMQYC

                         241                                                        300
GenBank G a.a.   KHWGVRLPSGVWFEMADKDLFAAARFPECPEGSSISAPSQTSVDVSLIQDVERILDYSLC
        HR G a.a.   K░WGVRLPSGVWFEMADKDLFAAARFPECPEGSSISAPSQTSVDVSLIQDVERIL.....
        M2 G a.a.   ...............................PSQTSVDVSLIQDVERILDYSLC
        M3 G a.a.   KHWGVRLPSGVWFEMADKDLFAAARFPECPEGSSISAPSQTSVDVSLIQDVERILDYSLC
        M4 G a.a.   K░WGVRLPSGVWF░MADKDLFAAARFPECPEGSSISAPSQTSVDVSLIQDVERI......

                         301                                                        360
GenBank G a.a.   QETWSKIRAGLPISPVDLSYLAPKNPGTGPAFTIINGTLKYFETRYIRVDIAAPILSRMV
        HR G a.a.   ............................................................
        M2 G a.a.   QETWSKIRAGLPISPVDLSYLAPKNPGTGP░FTIINGTLKYFETRYIRVDIAAPILSRMV
        M3 G a.a.   QETWSKIRAGLPISPVDLSYLAPKNPGTGPAFTIINGTLKYFETRYIRVDIAAPILSRMV
        M4 G a.a.   ...............................YFETRYIRVDIAAPILSRMV

                         361                                                        420
GenBank G a.a.   GMISGTTTERELWDDWAPYEDVEIGPNGVLRTSSGYKFPLYMIGHGMLDSDLHLSSKAQV
        HR G a.a.   ............................................................
        M2 G a.a.   GMISGTTTERELWDDWAPYEDVEIGPNGVLRTSSGYKFPLYMIGHGMLDSDLHLSSKAQV
        M3 G a.a.   GMISGTTTERELWDDWAPYEDVEIGPNGVLRTSSGYKFPLYMIGHGMLDSDLHLSSKAQV
        M4 G a.a.   GMISGTTTERELWDDWAPYEDVEIGPNGVLRTSSGYKFPLYMIGHGMLDSDLHLSSKAQV
```

FIGURE 21-1

```
                    421                                                              480
GenBank G a.a.      FEHPHIQDAASQLPDDE[S]LFFGDTGLSKNPIE[L]VEGWFSSWKSSIASFFFIIGLIIGLFL
   HR G a.a.        ..........................................................
   M2 G a.a.        FEHPHIQDAASQLPDDETLFFGDTGLSKNPIEFVEGWFSSWKSSIASFFFIIGLIIGLFL
   M3 G a.a.        FEHPHIQDA[XA]QLPDDETLFFGDTGLSKNPIEFVEGWFSSWKSSIASFFFIIGLIIGLFL
   M4 G a.a.        FEHPHIQDAASQLPDDETLFFGDTGLSKNPIEFVEGWFSSWKSSIASFFFIIGLIIGLFL

                    481                                        512
GenBank G a.a.      VLRVGI[H]LCIKLKHTKKRQIYTDIEMNRLGK
   HR G a.a.        ................................
   M2 G a.a.        VLRVGIYLCIKLKHTKKRQIYTDIEMNRLGK
   M3 G a.a.        VLRVGIYLCIKLKHTKKRQIYTDIEMNRLGK
   M4 G a.a.        VLRVGIYLCIKLKHTKKRQIYTDIEMNRLGK
```

FIGURE 21-2

```
                     1                                                          60
GenBank L nucl.     ATGGAAGTCCACGATTTTGAGACCGACGAGTTCAATGATTTCAATGAAGATGACTATGCC
HR L nucl.          ............................................................
M2 L nucl.          ATGGAAGTCCACGATTTTGAGACCGACGAGTTCAATGATTTCAATGAAGATGACTATGCC
M4 L nucl.          ATGGAAGTCCACGATTTTGAGACCGACGAGTTCAATGATTTCAATGAAGATGACTATGCC

                     61                                                        120
GenBank L nucl.     ACAAGAGAATTCCTGAATCCCGATGAGCGCATGACGTACTTGAATCATGCTGATTACAAT
HR L nucl.          ............................................................
M2 L nucl.          ACAAGAGAATTCCTGAATCCCGATGAGCGCATGACGTACTTGAATCATGCTGATTACAAT
M4 L nucl.          ACAAGAGAATTCCTGAATCCCGATGAGCGCATGACGTACTTGAATCATGCTGATTACAAT

                     121                                                       180
GenBank L nucl.     TTGAATTCTCCTCTAATTAGTGATGATATTGACAATTTGATCAGGAAATTCAATTCTCTT
HR L nucl.          ............................................................
M2 L nucl.          TTGAATTCTCCTCTAATTAGTGATGATATTGACAATTTGATCAGGAAATTCAATTCTCTT
M4 L nucl.          TTGAATTCTCCTCTAATTAGTGATGATATTGACAATTTGATCAGGAAATTCAATTCTCTT

                     181                                                       240
GenBank L nucl.     CCGATTCCCTCGATGTGGGATAGTAAGAACTGGGATGGAGTTCTTGAGATGTTAACATCA
HR L nucl.          ............................................................
M2 L nucl.          CCGATTCCCTCGATGTGGGATAGTAAGAACTGGGATGGAGTTCTTGAGATGTTAACATCA
M4 L nucl.          CCGATTCCCTCGATGTGGGATAGTAAGAACTGGGATGGAGTTCTTGAGATGTTAACATCA

                     241                                                       300
GenBank L nucl.     TGTCAAGCCAATCCCATCTCAACATCTCAGATGCATAAATGGATGGGAAGTTGGTTAATG
HR L nucl.          ............................................................
M2 L nucl.          TGTCAAGCCAATCCCATCTCAACATCTCAGATGCATAAATGGATGGGAAGTTGGTTAATG
M4 L nucl.          TGTCAAGCCAATCCCATCTCAACATCTCAGATGCATAAATGGATGGGAAGTTGGTTAATG

                     301                                                       360
GenBank L nucl.     TCTGATAATCATGATGCCAGTCAAGGGTATAGTTTTTTACATGAAGTGGACAAAGAGGCA
HR L nucl.          ............................................................
M2 L nucl.          TCTGATAATCATGATGCCAGTCAAGGGTATAGTTTTTTACATGAAGTG............
M4 L nucl.          TCTGATAATCATGATGCCAGTCAAGGGTATAGTTTTTTACATGAAGTGGACAAAGAGGCA

                     361                                                       420
GenBank L nucl.     GAAATAACATTTGACGTGGTGGAGACCTTCATCCGCGGCTGGGGCAACAAACCAATTGAA
HR L nucl.          ............................................................
M2 L nucl.          ............................................................
M4 L nucl.          GAAATAACATTTGACGTGGTGGAGACCTTCATCCGCGGCTGGGGCAACAAACCAATTGAA

                     421                                                       480
GenBank L nucl.     TACATCAAAAAGGAAAGATGGACTGACTCATTCAAAATTCTCGCTTATTTGTGTCAAAAG
HR L nucl.          ............................................................
M2 L nucl.          ............................................................
M4 L nucl.          TACATCAAAAAGGAAAGATGGACTGACTCATTCAAAATTCTCGCTTATTTGTGTCAAAAG

                     481                                                       540
GenBank L nucl.     TTTTTGGACTTACACAAGTTGACATTAATCTTAAATGCTGTCTCTGAGGTGGAATTGCTC
HR L nucl.          ............................................................
M2 L nucl.          ............................................................
M4 L nucl.          TTTTTGGACTTACACAAGTTGACATTAATCTTAAATGCTGTCTCTGAGGTGGAATTGCTC
```

FIGURE 22-1

```
                    541                                                    600
GenBank L nucl.     AACTTGGCGAGGACTTTCAAAGGCAAAGTCAGAAGAAGTTCTCATGGAACGAACATATGC
HR L nucl.          ............................................................
M2 L nucl.          ............................................................
M4 L nucl.          AACTTGGCGAGGACTTTCAAAGGCAAAGTCAGAAGAAGTTCTCATGGAACGAACATATGC

                    601                                                    660
GenBank L nucl.     AGGATTAGGGTTCCCAGCTTGGGTCCTACTTTTATTTCAGAAGGATGGGCTTACTTCAAG
HR L nucl.          ............................................................
M2 L nucl.          ............................................................
M4 L nucl.          AGGCTTAGGGTTCCCAGCTTGGGTCCTACTTTTATTTCAGAAGGATGGGCTTACTTCAAG

                    661                                                    720
GenBank L nucl.     AAACTTGATATTCTAATGGACCGAAACTTTCTGTTAATGGTCAAAGATGTGATTATAGGG
HR L nucl.          ............................................................
M2 L nucl.          ............................................................
M4 L nucl.          AAACTTGATATTCTAATGGACCGAAACTTTCTGTTAATGGTCAAAGATGTGATTATAGGG

                    721                                                    780
GenBank L nucl.     AGGATGCAAACGGTGCTATCCATGGTATGTAGAATAGACAACCTGTTCTCAGAGCAAGAC
HR L nucl.          ............................................................
M2 L nucl.          ............................................................
M4 L nucl.          AGGATGCAAACGGTGCTATCCATGGTATGTAGAATAGACAACCTGTTCTCAGAGCAAGAC

                    781                                                    840
GenBank L nucl.     ATCTTCTCCCTTCTAAATATCTACAGAATTGGAGATAAAATTGTGGAGAGGCAGGGAAAT
HR L nucl.          ............................................................
M2 L nucl.          ............................................................
M4 L nucl.          ATCTTCTCCCTTCTAAATATCTACAGAATTGGAGATAAAATTGTGGAGAGGCAGGGAAAT

                    841                                                    900
GenBank L nucl.     TTTTCTTATGACTTGATTAAAATGGTGGAACCGATATGCAACTTGAAGCTGATGAAATTA
HR L nucl.          ............................................................
M2 L nucl.          ............................................................
M4 L nucl.          TTTTCTTATGACTTGATTAAAATGGTGGAACCGATATGCAACTTGAGGCTGATGAAATTA

                    901                                                    960
GenBank L nucl.     GCAAGAGAATCAAGGCCTTTAGTCCCACAATTCCCTCATTTTGAAAATCATATCAAGACT
HR L nucl.          ............................................................
M2 L nucl.          ............................................................
M4 L nucl.          GCAAGAGAATCAAGGCCTTTAGTCCCACAATTCCCTCATTTTGAAAATCATATCAAGACT

                    961                                                   1020
GenBank L nucl.     TCTGTTGATGAAGGGGCAAAAATTGACCGAGGTATAAGATTCCTCCATGATCAGATAATG
HR L nucl.          ............................................................
M2 L nucl.          ............................................................
M4 L nucl.          TCTGTTGATGAAGGGGCAAAAATTGACCGAGGTATAAGATTCCTCCATGATCAGATAATG
```

FIGURE 22-2

```
                    1021                                                      1080
GenBank L nucl.     AGTGTGAAAACAGTGGATCTCACACTGGTGATTTATGGATCGTTCAGACATTGGGGTCAT
HR L nucl.          .................................................CATTGGGGTCAT
M2 L nucl.          ............................................................
M4 L nucl.          AGTGTGAAAACAGTGGATCTCACACTGGTGATTTATGGATCGTTCAGACATTGGGGTCAT

                    1081                                                      1140
GenBank L nucl.     CCTTTTATAGATTATTACACTGGACTAGAAAAATTACATTCCCAAGTAACCATGAAGAAA
HR L nucl.          CCTTTTATAGATTATTACGCTGGWCTAGAAAAATTACATTCCCAAGTWACCATKAAGAAA
M2 L nucl.          ............................................................
M4 L nucl.          CCTTTTATAGATTATTACGCTGGACTAGAAAAATTACATTCCCAAGTAACCATGAAGAAA

                    1141                                                      1200
GenBank L nucl.     GATATTGATGTGTCATATGCAAAAGCACTTGCAAGTGATTTAGCTCGGATTGTTCTATTT
HR L nucl.          GATATTGATGTGTCATATGCRAAAGCACTTGCAAGTGATTTAGCTCGGATTGTTCTATTT
M2 L nucl.          ............................................................
M4 L nucl.          GATATTGATGTGTCATATGCAAAAGCACTTGCAAGTGATTTAGCTCGGATTGTTCTATTT

                    1201                                                      1260
GenBank L nucl.     CAACAGTTCAATGATCATAAAAAGTGGTTCGTGAATGGAGACTTGCTCCCTCATGATCAT
HR L nucl.          CAACAGTTCAATGATCATAMAAAGTGGTTCGTGAATGGAGACTTGCTCCCTCATGATCAT
M2 L nucl.          ............................................................
M4 L nucl.          CAACAGTTCAATGATCATAAAAAGTGGTTCGTGAATGGAGACTTGCTCCCTCATGATCAT

                    1261                                                      1320
GenBank L nucl.     CCCTTTAAAAGTCATGTTAAAGAAAATACATGGCCCACAGCTGCTCAAGTTCAAGATTTT
HR L nucl.          CCCTTTAAAAGTCATGTTAAAGAAAATACATGGCCCACAGCTGCTCAAGTTCAAGATTTT
M2 L nucl.          ............................................................
M4 L nucl.          CCCTTTAAAAGTCATGTTAAAGAAAATACATGGCCCACAGCTGCTCAAGTTCAAGATTTT

                    1321                                                      1380
GenBank L nucl.     GGAGATAAATGGCATGAACTTCCGCTGATTAAATGTTTTGAAATACCCGACTTACTAGAC
HR L nucl.          GGAGATAAATGGCATGAACTTCCGCTGATTAAATGTTTTGAAATACCCGACTTACTAGAC
M2 L nucl.          ............................................................
M4 L nucl.          GGAGATAAATGGCATGAACTTCCGCTGATTAAATGTTTTGAAATACCCGACTTACTAGAC

                    1381                                                      1440
GenBank L nucl.     CCATCGATAATATACTCTGACAAAAGTCATTCAATGAATAGGTCAGAGGTGTTGAAACAT
HR L nucl.          CCATCGATAATATACTCTGACAAAAGTCATTCAATGAATAGGTCAGAGGTGTTGAAACAT
M2 L nucl.          ............................................................
M4 L nucl.          CCATCGATAATATACTCTGACAAAAGTCATTCAATGAATAGGTCAGAGGTGTTGAAACAT

                    1441                                                      1500
GenBank L nucl.     GTCCGAATGAATCCGAACACTCCTATCCCTAGTAAAAAGGTGTTGCAGACTATGTTGGAC
HR L nucl.          GTCCGAATGAATCCGAACACTCCTATCCCTAGTAAAAAGGTGTTGCAGACTATGTTGGAC
M2 L nucl.          ............................................................
M4 L nucl.          GTCCGAATGAATCCGAACACTCCTATCCCTAGTAAAAAGGTGTTGCAGACTATGTTGGAC
```

FIGURE 22-3

```
                        1501                                                      1560
GenBank L nucl.    ACAAAGGCTACCAATTGGAAAGAATTTCTTAAAGAGATTGATGAGAAGGGCTTAGATGAT
HR L nucl.         ACAAAGGCTACCAATTGGAAAGAATTTCTTAAAGAGATTGATGAGAAGGGCTTAGATGAT
M2 L nucl.         ............................................................
M4 L nucl.         ACAAAGGCTACCAATTGGAAAGAATTTCTTAAAGAGATTGATGAGAAGGGCTTAGATGAT

                        1561                                                      1620
GenBank L nucl.    GATGATCTAATTATTGGTCTTAAAGGAAAGGAGAGGGAACTGAAGTTGGCAGGTAGATTT
HR L nucl.         GATGATCTAATTATTGGTCTTAAAGGAAAGGAGAGGGAACTGAAGTTGGCAGGTAGATTT
M2 L nucl.         ............................................................
M4 L nucl.         GATGATCTAATTATTGGTCTTAAAGGAAAGGAGAGGGAACTGAAGTTGGCAGGTAGATTT

                        1621                                                      1680
GenBank L nucl.    TTCTCCCTAATGTCTTGGAAATTGCGAGAATACTTTGTAATTACCGAATATTTGATAAAG
HR L nucl.         TTCTCCCTAATGTCTTGGAAATTGCGAGAATACTTTGTAATTACCGAATATTTGATAAAG
M2 L nucl.         ............................................................
M4 L nucl.         TTCTCCCTAATGTCTTGGAAATTGCGAGAATACTTTGTAATTACCGAATATTTGATAAAG

                        1681                                                      1740
GenBank L nucl.    ACTCATTTCGTCCCTATGTTTAAAGGCCTGACAATGGCGGACGATCTAACTGCAGTCATT
HR L nucl.         ACTCATTTCGTCCCTATGTTTAAAGGCCTGACAATGGCGGACGATCTAACTGCAGTCATT
M2 L nucl.         ............................................................
M4 L nucl.         ACTCATTTCGTCCCTATGTTTAAAGGCCTGACAATGGCGGACGATCTAACTGCAGTCATT

                        1741                                                      1800
GenBank L nucl.    AAAAAGATGTTAGATTCCTCATCCGGCCAAGGATTGAAGTCATATGAGGCAATTTGCATA
HR L nucl.         AAAAAGATGTTAGATTCCTCATCCGGCCAAGGATTGAAGTCATATGAGGCAATTTGCATA
M2 L nucl.         ............................................................
M4 L nucl.         AAAAAGATGTTAGATTCCTCATCCGGCCAAGGATTGAAGTCATATGAGGCAATTTGCATA

                        1801                                                      1860
GenBank L nucl.    GCCAATCACATTGATTACGAAAAATGGAATAACCACCAAAGGAAGTTATCAAACGGCCCA
HR L nucl.         GCCAATCACATTGATTACGAAAAATGGAATAACCACCAAAGGAAGTTATCAAACGGCCCA
M2 L nucl.         ............................................................
M4 L nucl.         GCCAATCACATTGATTACGAAAAATGGAATAACCACCAAAGGAAGTTATCAAACGGCCCA

                        1861                                                      1920
GenBank L nucl.    GTGTTCCGAGTTATGGGCCAGTTCTTAGGTTATCCATCCTTAATCGAGAGAACTCATGAA
HR L nucl.         GTGTTCCGAGTTATGGGCCAGTTCTTAGGTTATCCATCCTTAATCGAGAGAACTCATGAA
M2 L nucl.         ............................................................
M4 L nucl.         GTGTTCCGAGTTATGGGCCAGTTCTTAGGTTATCCATCCTTAATCGAGAGAACTCATGAA

                        1921                                                      1980
GenBank L nucl.    TTTTTTGAGAAAAGTCTTATATACTACAATGGAAGACCAGACTTGATGCGTGTTCACAAC
HR L nucl.         TTTTTTGAGAAAAGTCTTATATACTACAATGGAAGACCAGACTTGATGCGTGTTCACAAC
M2 L nucl.         ............................................................
M4 L nucl.         TTTTTTGAGAAAAGTCTTATATACTACAATGGAAGACCAGACTTGATGCGTGTTCACAAC

                        1981                                                      2040
GenBank L nucl.    AACACACTGATCAATTCAACCTCCCAACGAGTTTGTTGGCAAGGACAAGAGGGTGGACTG
HR L nucl.         AACACACTGATCAATTCAACCTCCCAACGAGTTTGTTGGCAAGGACAAGAGGGTGGACTG
M2 L nucl.         ............................................................
M4 L nucl.         AACACACTGATCAATTCAACCTCCCAACGAGTTTGTTGGCAAGGACAAGAGGGTGGACTG
```

FIGURE 22-4

```
                        2041                                                    2100
GenBank L nucl.   GAAGGTCTACGGCAAAAAGGATGGACTATCCTCAATCTACTGGTTATTCAAAGAGAGGCT
HR L nucl.        GAAGGTCTACGGCAAAAAGGATGGAGTATCCTCAATCTACTGGTTATTCAAAGAGAGGCT
M2 L nucl.        ............................................................
M4 L nucl.        GAAGGTCTACGGCAAAAAGGATGGAGTATCCTCAATCTACTGGTTATTCAAAGAGAGGCT

                        2101                                                    2160
GenBank L nucl.   AAAATCAGAAACACTGCTGTCAAAGTCTTGGCACAAGGTGATAATCAAGTTATTTGCACA
HR L nucl.        AAAATCAGAAACACTGCTGTCAAAGTCTTGGCACAAGGTGATAATCAAGTTATTTGCACA
M2 L nucl.        ............................................................
M4 L nucl.        AAAATCAGAAACACTGCTGTCAAAGTCTTGGCACAAGGTGATAATCAAGTTATTTGCACA

                        2161                                                    2220
GenBank L nucl.   CAGTATAAAACGAAGAAATCGAGAAACGTTGTAGAATTACAGGGTGCTCTCAATCAAATG
HR L nucl.        CAGTATAAAACGAAGAAATCGAGAAACGTTGTAGAATTACAGGGTGCTCTCAATCAAATG
M2 L nucl.        ............................................................
M4 L nucl.        CAGTATAAAACGAAGAAATCGAGAAACGTTGTAGAATTACAGGGTGCTCTCAATCAAATG

                        2221                                                    2280
GenBank L nucl.   GTTTCTAATAATGAGAAAATTATGACTGCAATCAAAATAGGGACAGGGAAGTTAGGACTT
HR L nucl.        GTTTCTAATAATGAGAAAATTATGACTGCAATCAAAATAGGGACAGGGAAGTTAGGACTT
M2 L nucl.        ............................................................
M4 L nucl.        GTTTCTAATAATGAGAAAATTATGACTGCAATCAAAATAGGGACAGGGAAGTTAGGACTT

                        2281                                                    2340
GenBank L nucl.   TTGATAAATGACGATGAGACTATGCAATCTGCAGATTACTTGAATTATGGAAAAATACCG
HR L nucl.        TTGATAAATGACGATGAGACTATGCAATCTGCAGATTACTTGAATTATGGAAAAATACCG
M2 L nucl.        ............................................................
M4 L nucl.        TTGATAAATGACGATGAGACTATGCAATCTGCAGATTACTTGAATTATGGAAAAATACCA

                        2341                                                    2400
GenBank L nucl.   ATTTTCCGTGGAGTGATTAGAGGGTTAGAGACCAAGAGATGGTCACGAGTGACTTGTGTC
HR L nucl.        ATTTTCCGTGGAGTGATTAGAGGGTTAGAGACCAAGAGATGGTCACGAGTGACTTGTGTC
M2 L nucl.        ............................................................
M4 L nucl.        ATTTTCCGTGGAGTGATTAGAGGGTTAGAGACCAAGAGATGGTCACGAGTGACTTGTGTC

                        2401                                                    2460
GenBank L nucl.   ACCAATGACCAAATACCCACTTGTGCTAATATAATGAGCTCAGTTTCCACAAATGCTCTC
HR L nucl.        ACCAATGACCAAATACCCACTTGTGCTAATATAATGAGCTCAGTTTCCACAAATGCTCTC
M2 L nucl.        ............................................................
M4 L nucl.        ACCAATGACCAAATACCCACTTGTGCTAATATAATGAGCTCAGTTTCCACAAATGCTCTC

                        2461                                                    2520
GenBank L nucl.   ACCGTAGCTCATTTTGCTGAGAACCCAATCAATGCCATGATACAGTACAATTATTTTGGG
HR L nucl.        ACCGTAGCTCATTTTGCTGAGAACCCAATCAATGCCATGATACAGTACAATTATTTTGGG
M2 L nucl.        ............................................................
M4 L nucl.        ACCGTAGCTCATTTTGCTGAGAACCCAATCAATGCCATGATACAGTACAATTATTTTGGG

                        2521                                                    2580
GenBank L nucl.   ACATTTGCTAGACTCTTGTTGATGATGCATGATCCTGCTCTTCGTCAATCATTGTATGAA
HR L nucl.        ACATTTGCTAGACTCTTGTTGATGATGCATGATCCTGCTCTTCGTCAATCATTGTATGAA
M2 L nucl.        ............................................................
M4 L nucl.        ACATTTGCTAGACTCTTGTTGATGATGCATGATCCTGCTCTTCGTCAATCATTGTATGAA
```

FIGURE 22-5

```
              2581                                                        2640
GenBank L nucl.   GTTCAAGATAAGATACCGGGCTTGCACAGTTCTACTTTCAAATACGCCATGTTGTATTTG
HR L nucl.        GTTCAAGATAAGATACCGGGCTTGCACAGTTCTACTTTCAAATACGCCATGTTGTATTTG
M2 L nucl.        ............................................................
M4 L nucl.        GTTCAAGATAAGATACCGGGCTTGCACAGTTCTACTTTCAAATACGCCATGTTGTATTTG

              2641                                                        2700
GenBank L nucl.   GACCCTTCCATTGGAGGAGTGTCGGGCATGTCTTTGTCCAGGTTTTTGATTAGAGCCTTC
HR L nucl.        GACCCTTCCATTGGAGGAGTGTCGGGCATGTCTTTGTCCAGGTTTTTGATTAGAGCCTTC
M2 L nucl.        ............................................................
M4 L nucl.        GACCCTTCCATTGGAGGAGTGTCGGGCATGTCTTTGTCCAGGTTTTTGATTAGAGCCTTC

              2701                                                        2760
GenBank L nucl.   CCAGATCCCGTAACAGAAAGTCTCTCATTCTGGAGATTCATCCATGTACATGCTCGAAGT
HR L nucl.        CCAGATCCCGTAACAGAAAGTCTCTCATTCTGGAGATTCATCCATGTACATGCTCGAAGT
M2 L nucl.        ............................................................
M4 L nucl.        CCAGATCCCGTAACAGAAAGTCTCTCATTCTGGAGATTCATCCATGTACATGCTCGAAGT

              2761                                                        2820
GenBank L nucl.   GAGCATCTGAAGGAGATGAGTGCAGTATTTGGAAACCCCGAGATAGCCAAGTTTCGAATA
HR L nucl.        GAGCATCTGAAGGAGATGAGTGCAGTATTTGGAAACCCCGAGATAGCCAAGTTTCGAATA
M2 L nucl.        ............................................................
M4 L nucl.        GAGCATCTGAAGGAGATGAGTGCAGTATTTGGAAACCCCGAGATAGCCAAGTTTCGAATA

              2821                                                        2880
GenBank L nucl.   ACTCACATAGACAAGCTAGTAGAAGATCCAACCTCTCTGAACATCGCTATGGGAATGAGT
HR L nucl.        ACTCACATAGACAAGCTAGTAGAAGATCCAACCTCTCTGAACATCGCTATGGGAATGAGT
M2 L nucl.        ............................................................
M4 L nucl.        ACTCACATAGACAAGCTAGTAGAAGATCCAACCTCTCTGAACATCGCTATGGGAATGAGT

              2881                                                        2940
GenBank L nucl.  .CCAGCGAACTTGTTAAAGACTGAGGTTAAAAAATGCTTAATCGAATCAAGACAAACCATC
HR L nucl.        CCAGCGAACTTGTTAAAGACTGAGGTTAAAAAATGCTTAATCGAATCAAGACAAACCATC
M2 L nucl.        ............................................................
M4 L nucl.        CCAGCGAACTTGTTAAAGACTGAGGTTAAAAAATGCTTAATCGAATCAAGACAAACCATC

              2941                                                        3000
GenBank L nucl.   AGGAACCAGGTGATTAAGGATGCAACCATATATTTGTATCATGAAGAGGATCGGCTCAGA
HR L nucl.        AGGAACCAGGTGATTAAGGATGCAACCATATATTTGTATCATGAAGAGGATCGGCTCAGA
M2 L nucl.        ............................................................
M4 L nucl.        AGGAACCAGGTGATTAAGGATGCAACCATATATTTGTATCATGAAGAGGATCGGCTCAGA

              3001                                                        3060
GenBank L nucl.   AGTTTCTTATGGTCAATAAATCCTCTGTTCCCTAGATTTTTAAGTGAATTCAAATCAGGC
HR L nucl.        AGTTTCTTATGGTCAATAAATCCTCTGTTCCCTAGATTTTTAAGTGAATTCAAATCAGGC
M2 L nucl.        ............................................................
M4 L nucl.        AGTTTCTTATGGTCAATAAATCCTCTGTTCCCTAGATTTTTAAGTGAATTCAAATCAGGC

              3061                                                        3120
GenBank L nucl.   ACTTTTTTGGGAGTCGCAGACGGGCTCATCAGTCTATTTCAAAATTCTCGTACTATTCGG
HR L nucl.        ACTTTTTTGGGAGTCGCAGACGGGCTCATCAGTCTATTTCAAAATTCTCGTACTATTCGG
M2 L nucl.        ............................................................
M4 L nucl.        ACTTTTTTGGGAGTCGCAGACGGGCTCATCAGTCTATTTCAAAATTCTCGTACTATTCGG
```

FIGURE 22-6

```
                        3121                                                    3180
GenBank L nucl.    AACTCCTTTAAGAAAAAGTATCATAGGGAATTGGATGATTTGATTGTGAGGAGTGAGGTA
HR L nucl.         AACTCCTTTAAGAAAAAGTATCATAGGGAATTGGATGATTTGATTGTGAGGAGTGAGGTA
M2 L nucl.         ............................................................
M4 L nucl.         AACTCCTTTAAGAAAAAGTATCATAGGGAATTGGATGATTTGATTGTGAGGAGTGAGGTA

                        3181                                                    3240
GenBank L nucl.    TCCTCTTTGACACATTTAGGGAAACTTCATTTGAGAAGGGGATCATGTAAAATGTGGACA
HR L nucl.         TCCTCTTTGACACATTTAGGGAAACTTCATTTGAGAAGGGGATCATGTAAAATGTGGACA
M2 L nucl.         ............................................................
M4 L nucl.         TCCTCTTTGACACATTTAGGGAAACTTCATTTGAGAAGGGGATCATGTAAAATGTGGACA

                        3241                                                    3300
GenBank L nucl.    TGTTCAGCTACTCATGCTGACACATTAAGATACAAATCCTGGGGCCGTACAGTTATTGGG
HR L nucl.         TGTTCAGCTACTCATGCTGACACATTAAGATACAAATCCTGGGGCCGTACAGTTATTGGG
M2 L nucl.         ............................................................
M4 L nucl.         TGTTCAGCTACTCATGCTGACACATTAAGATACAAATCCTGGGGCCGTACAGTTATTGGG

                        3301                                                    3360
GenBank L nucl.    ACAACTGTACCCCATCCATTAGAAATGTTGGGTCCACAACATCGAAAAGAGACTCCTTGT
HR L nucl.         ACAACTGTACCCCATCCATTAGAAATGTTGGGTCCACAACATCGAAAAGAGACTCCTTGT
M2 L nucl.         ............................................................
M4 L nucl.         ACAACTGTACCCCATCCATTAGAAATGTTGGGTCCACAACATCGAAAAGAGACTCCTTGT

                        3361                                                    3420
GenBank L nucl.    GCACCATGTAACACATCAGGGGTTCAATTATGTTTCTGTGCATTGTCCAGACGGGATCCAT
HR L nucl.         GCACCATGTAACACATCAGGGGTTCAATTATGTTTCTGTGCATTGTCCAGACGGGATCCAT
M2 L nucl.         ............................................................
M4 L nucl.         GCACCATGTAACACATCAGGGGTTCAATTATGTTTCTGTGCATTGTCCAGACGGGATCCAT

                        3421                                                    3480
GenBank L nucl.    GACGTCTTTAGTTCACGGGGACCATTGCCTGCTTATCTAGGGTCTAAAACATCTGAATCT
HR L nucl.         GACGTCTTTAGTTCACGGGGACCATTGCCTGCTTATCTAGGGTCTAAAACATCTGAATCT
M2 L nucl.         ............................................................
M4 L nucl.         GACGTCTTTAGTTCACGGGGACCATTGCCTGCTTATCTAGGGTCTAAAACATCTGAATCT

                        3481                                                    3540
GenBank L nucl.    ACATCTATTTTGCAGCCTTGGGAAAGGGAAAGCAAAGTCCCACTGATTAAAAGAGCTACA
HR L nucl.         ACATCTATTTTGCAGCCTTGGGAAAGGGAAAGCAAAGTCCCACTGATTAAAAGAGCTACA
M2 L nucl.         ............................................................
M4 L nucl.         ACATCTATTTTGCAGCCTTGGGAAAGGGAAAGCAAAGTCCCACTGATTAAAAGAGCTACA

                        3541                                                    3600
GenBank L nucl.    CGTCTTAGAGATGCTATCTCTTGGTTTGTTGAACCCGACTCTAAACTAGCAATGACTATA
HR L nucl.         CGTCTTAGAGATGCTATCTCTTGGTTTGTTGAACCCGACTCTAAACTAGCAATGACTATA
M2 L nucl.         ............................................................
M4 L nucl.         CGTCTTAGAGATGCTATCTCTTGGTTTGTTGAACCCGACTCTAAACTAGCAATGACTATA

                        3601                                                    3660
GenBank L nucl.    CTTTCTAACATCCACTCTTTAACAGGCGAAGAATGGACCAAAAGGCAGCATGGGTTCAAA
HR L nucl.         CTTTCTAACATCCACTCTTTAACAGGCGAAGAATGGACCAAAAGGCAGCATGGGTTCAAA
M2 L nucl.         ............................................................
M4 L nucl.         CTTTCTAACATCCACTCTTTAACAGGCGAAGAATGGACCAAAAGGCAGCATGGGTTCAAA
```

FIGURE 22-7

```
                    3661                                                      3720
GenBank L nucl.     AGAACAGGGTCTGCCCTTCATAGGTTTTCGACATCTCGGATGAGCCATGGTGGGTTCGCA
HR L nucl.          AGAACAGGGTCTGCCCTTCATAGGTTTTCGACATCTCGGATGAGCCATGGTGGGTTCGCA
M2 L nucl.          ............................................................
M4 L nucl.          AGAACAGGGTCTGCCCTTCATAGGTTTTCGACATCTCGGATGAGCCATGGTGGGTTCGCA

                    3721                                                      3780
GenBank L nucl.     TCTCAGAGCACTGCAGCATTGACCAGGTTGATGGCAACTACAGACACCATGAGGGATCTG
HR L nucl.          TCTCAGAGCACTGCAGCATTGACCAGGTTGATGGCAACTACAGACACCATGAGGGATCTG
M2 L nucl.          ............................................................
M4 L nucl.          TCTCAGAGCACTGCAGCATTGACCAGGTTGATGGCAACTACAGACACCATGAGGGATCTG

                    3781                                                      3840
GenBank L nucl.     GGAGATCAGAATTTCGACTTTTTATTCCAAGCAACGTTGCTCTATGCTCAAATTACCACC
HR L nucl.          GGAGATCAGAATTTCGACTTTTTATTCCACGCAACGTTGCTCTATGCTCAGATTACCACC
M2 L nucl.          ............................................................
M4 L nucl.          GGAGATCAGAATTTCGACTTTTTATTCCANGCAACGTTGCTCTATGCTCANATTACCACC

                    3841                                                      3900
GenBank L nucl.     ACTGTTGCAAGAGACGGATGGATCACCAGTTGTACAGATCATTATCATATTGCCTGTAAG
HR L nucl.          ACTGTTGCAAGAGACGGATGGATCACCAGTTGTACAGATCATTATCATATTGCCTGTAAG
M2 L nucl.          ............................................................
M4 L nucl.          ACTGTTGCAAGAGACGGATGGATCACCAGTTGTACAGATCATTATCATATTGCCTGTAAG

                    3901                                                      3960
GenBank L nucl.     TCCTGTTTGAGACCCATAGAAGAGATCACCCTGGACTCAAGTATGGACTACACGCCCCCA
HR L nucl.          TCCTGTTTGAGACCCATAGAAGAGATCACCCTGGACTCAAGTATGGACTACACGCCCCCA
M2 L nucl.          ............................................................
M4 L nucl.          TCCTGTTTGAGACCCATAGAAGAGATCACCCTGGACTCAAGTATGGACTACACGCCCCCA

                    3961                                                      4020
GenBank L nucl.     GATGTATCCCATGTGCTGAAGACATGGAGGAATGGGGAAGGTTCGTGGGGACAAGAGATA
HR L nucl.          GATGTATCCCATGTGCTGAAGACATGGAGGAATGGGGAAGGTTCGTGGGGACAAGAGATA
M2 L nucl.          ............................................................
M4 L nucl.          GATGTATCCCATGTGCTGAAGACATGGAGGAATGGGGAAGGTTCGTGGGGACAAGAGATA

                    4021                                                      4080
GenBank L nucl.     AAACAGATCTATCCTTTAGAAGGGAATTGGAAGAATTTAGCACCTGCTGAGCAATCCTAT
HR L nucl.          AAACAGATCTATCCTTTAGAAGGGAATTGGAAGAATTTAGCACCTGCTGAGCAATCCTAT
M2 L nucl.          ............................................................
M4 L nucl.          AAACAGATCTATCCTTTAGAAGGGAATTGGAAGAATTTAGCACCTGCTGAGCAATCCTAT

                    4081                                                      4140
GenBank L nucl.     CAAGTCGGCAGATGTATAGGTTTTCTATATGGAGACTTGGCGTATAGAAAATCTACTCAT
HR L nucl.          CAAGTCGGCAGATGTATAGGTTTTCTATATGGAGACTTGGCGTATAGAAAATCTACTCAT
M2 L nucl.          ............................................................
M4 L nucl.          CAAGTCGGCAGATGTATAGGTTTTCTATATGGAGACTTGGCGTATAGAAAATCTACTCAT

                    4141                                                      4200
GenBank L nucl.     GCCGAGGACAGTTCTCTATTTCCTCTATCTATACAAGGTCGTATTAGAGGTCGAGGTTTC
HR L nucl.          GCCGAGGACAGTTCTCTATTTCCTCTATCTATACAAGGTCGTATTAGAGGTCGAGGTTTC
M2 L nucl.          ............................................................
M4 L nucl.          GCCGAGGACAGTTCTCTATTTCCTCTATCTATACAAGGTCGTATTAGAGGTCGAGGTTTC
```

FIGURE 22-8

```
                   4201                                                      4260
GenBank L nucl.  TTAAAAGGGTTGCTAGACGGATTAATGAGAGCAAGTTGCTGCCAAGTAATACACCGGAGA
HR L nucl.       TTAAAAGGGTTGCTAGACGGATTAATGAGAGCAAGTTGCTGCCAAGTAATACACCGGAGA
M2 L nucl.       ............................................................
M4 L nucl.       TTAAAAGGGTTGCTAGACGGATTAATGAGAGCAAGTTGCTGCCAAGTAATACACCGGAGA

                   4261                                                      4320
GenBank L nucl.  AGTCTGGCTCATTTGAAGAGGCCGGCCAACGCAGTGTACGGAGGTTTGATTTACTTGATT
HR L nucl.       AGTCTGGCTCATTTGAAGAGGCCGGCCAACGCAGTGTACGGAGGTTTGATTTACTTGATT
M2 L nucl.       ............................................................
M4 L nucl.       AGTCTGGCTCATTTGAAGAGGCCGGCCAACGCAGTGTACGGAGGTTTGATTTACTTGATT

                   4321                                                      4380
GenBank L nucl.  GATAAATTGAGTGTATCACCTCCATTCCTTTCTCTTACTAGATCAGGACCTATTAGAGAC
HR L nucl.       GATAAATTGAGTGTATCACCTCCATTCCTTTCTCTTACTAGATCAGGACCTATTAGAGAC
M2 L nucl.       ............................................................
M4 L nucl.       GATAAATTGAGTGTATCACCTCCATTCCTTTCTCTTACTAGATCAGGACCTATTAGAGAC

                   4381                                                      4440
GenBank L nucl.  GAATTAGAAACGATTCCCCACAAGATCCCAACCTCCTATCCGACAAGCAACCGTGATATG
HR L nucl.       GAATTAGAAACGATTCCCCACAAGATCCCAACCTCCTATCCGACAAGCAACCGTGATATG
M2 L nucl.       ............................................................
M4 L nucl.       GAATTAGAAACGATTCCCCACAAGATCCCAACCTCCTATCCGACAAGCAACCGTGATATG

                   4441                                                      4500
GenBank L nucl.  GGGGTGATTGTCAGAAATTACTTCAAATACCAATGCCGTCTAATTGAAAAGGGAAAATAC
HR L nucl.       GGGGTGATTGTCAGAAATTACTTCAAATACCAATGCCGTCTAATTGAAAAGGGAAAATAC
M2 L nucl.       ............................................................
M4 L nucl.       GGGGTGATTGTCAGAAATTACTTCAAATACCAATGCCGTCTAATTGAAAAGGGAAAATAC

                   4501                                                      4560
GenBank L nucl.  AGATCACATTATTCACAATTATGGTTATTCTCAGATGTCTTATCCATAGACTTCATTGGA
HR L nucl.       AGATCACATTATTCACAATTATGGTTATTCTCAGATGTCTTATCCATAGACTTCATTGGA
M2 L nucl.       ............................................................
M4 L nucl.       AGATCACATTATTCACAATTATGGTTATTCTCAGATGTCTTATCCATAGACTTCATTGGA

                   4561                                                      4620
GenBank L nucl.  CCATTCTCTATTTCCACCACCCTCTTGCAAATCCTATACAAGCCATTTTTATCTGGGAAA
HR L nucl.       CCATTCTCTATTTCCACCACCCTCTTGCAAATCCTATACAAGCCATTTTTATCTGGGAAA
M2 L nucl.       ............................................................
M4 L nucl.       CCATTCTCTATTTCCACCACCCTCTTGCAAATCCTATACAAGCCATTTTTATCTGGGAAA

                   4621                                                      4680
GenBank L nucl.  GATAAGAATGAGTTGAGAGAGCTGGCAAATCTTTCTTCATTGCTAAGATCAGGAGAGGGG
HR L nucl.       GATAAGAATGAGTTGAGAGAGCTGGCAAATCTTTCTTCATTGCTAAGATCAGGAGAGGGG
M2 L nucl.       ............................................................
M4 L nucl.       GATAAGAATGAGTTGAGAGAGCTGGCAAATCTTTCTTCATTGCTAAGATCAGGAGAGGGG

                   4681                                                      4740
GenBank L nucl.  TGGGAAGACATACATGTGAAATTCTTCACCAAGGACATATTATTGTGTCCAGAGGAAATC
HR L nucl.       TGGGAAGACATACATGTGAAATTCTTCACCAAGGACATATTATTGTGTCCAGAGGAAATC
M2 L nucl.       ............................................................
M4 L nucl.       TGGGAAGACATACATGTGAAATTCTTCACCAAGGACATATTATTGTGTCCAGAGGAAATC
```

FIGURE 22-9

```
              4741                                                        4800
GenBank L nucl.   AGACATGCTTGCAAGTTCGGGATTGCTAAGGATAATAATAAAGACATGAGCTATCCCCCT
HR L nucl.        AGACATGCTTGCAAGTTCGGGATTGCTAAGGATAATAATAAAGACATGAGCTATCCCCCT
M2 L nucl.        ............................................................
M4 L nucl.        AGACATGCTTGCAAGTTCGGGATTGCTAAGGATAATAATAAAGACATGAGCTATCCCCCT

              4801                                                        4860
GenBank L nucl.   TGGGGAAGGGAATCCAGAGGGACAATTACAACAATCCCTGTTTATTATACGACCACCCCT
HR L nucl.        TGGGGAAGGGAATCCAGAGGGACAATTACAACAATCCCTGTTTATTATACGACCACCCCT
M2 L nucl.        ............................................................
M4 L nucl.        TGGGGAAGGGAATCCAGAGGGACAATTACAACAATCCCTGTTTATTATACGACCACCCCT

              4861                                                        4920
GenBank L nucl.   TACCCAAAGATGCTAGAGATGCCTCCAAGAATCCAAAATCCCCTGCTGTCCGGAATCAGG
HR L nucl.        TACCCAAAGATGCTAGAGATGCCTCCAAGAATCCAAAATCCCCTGCTGTCCGGAATCAGG
M2 L nucl.        ............................................................
M4 L nucl.        TACCCAAAGATGCTAGAGATGCCTCCAAGAATCCAAAATCCCCTGCTGTCCGGAATCAGG

              4921                                                        4980
GenBank L nucl.   TTGGGCCAATTACCAACTGGCGCTCATTATAAAATTCGGAGTATATTACATGGAATGGGA
HR L nucl.        TTGGGCCAGTTACCAACTGGCGCTCATTATAAAATTCGGAGTATATTACATGGAATGGGA
M2 L nucl.        ............................................................
M4 L nucl.        TTGGGCCAGTTACCAACTGGCGCTCATTATAAAATTCGGAGTATATTACATGGAATGGGA

              4981                                                        5040
GenBank L nucl.   ATCCATTACAGGGACTTCTTGAGTTGTGGAGACGGCTCCGGAGGGATGACTGCTGCATTA
HR L nucl.        ATCCATTACAGGGACTTCTTGAGTTGTGGAGACGGCTCCGGAGGGATGACTGCTGCATTA
M2 L nucl.        ............................................................
M4 L nucl.        ATCCATTACAGGGACTTCTTGAGTTGTGGAGACGGCTCCGGAGGGATGACTGCTGCATTA

              5041                                                        5100
GenBank L nucl.   CTACGAGAAAATGTGCATAGCAGAGGAATATTCAATAGTCTGTTAGAATTATCAGGGTCA
HR L nucl.        CTACGAGAAAATGTGCATAGCAGAGGAATATTCAATAGTCTGTTAGAATTATCAGGGTCA
M2 L nucl.        ............................................................
M4 L nucl.        CTACGAGAAAATGTGCATAGCAGAGGAATATTCAATAGTCTGTTAGAATTATCAGGGTCA

              5101                                                        5160
GenBank L nucl.   GTCATGCGAGGCGCCTCTCCTGAGCCCCCCAGTGCCCTAGAAACTTTAGGAGGAGATAAA
HR L nucl.        GTCATGCGAGGCGCCTCTCCTGAGCCCCCCAGTGCCCTAGAAACTTTAGGAGGAGATAAA
M2 L nucl.        ............................................................
M4 L nucl.        GTCATGCGAGGCGCCTCTCCTGAGCCCCCCAGTGCCCTAGAAACTTTAGGAGGAGATAAA

              5161                                                        5220
GenBank L nucl.   TCGAGATGTGTAAATGGTGAAACATGTTGGGAATATCCATCTGACTTATGTGACCCAAGG
HR L nucl.        TCGAGATGTGTAAATGGTGAAACATGTTGGGAATATCCATCTGACTTATGTGACCCAAGG
M2 L nucl.        ............................................................
M4 L nucl.        TCGAGATGTGTAAATGGTGAAACATGTTGGGAATATCCATCTGACTTATGTGACCCAAGG

              5221                                                        5280
GenBank L nucl.   ACTTGGGACTATTTCCTCCGACTCAAAGCAGGCTTGGGGCTTCAAATTGATTTAATTGTA
HR L nucl.        ACTTGGGACTATTTCCTCCGACTCAAAGCAGGCTTGGGGCTTCAAATTGATTTAATTGTA
M2 L nucl.        ............................................................
M4 L nucl.        ACTTGGGACTATTTCCTCCGACTCAAAGCAGGCTTGGGGCTTCAAATTGATTTAATTGTA
```

FIGURE 22-10

```
                  5281                                                     5340
GenBank L nucl.   ATGGATATGGAAGTTCGGGATTCTTCTACTAGCCTGAAAATTGAGACGAATGTTAGAAAT
HR L nucl.        ATGGATATGGAAGTTCGGGATTCTTCTACTAGCCTGAAAATTGAGACGAATGTTAGAAAT
M2 L nucl.        ............................................................
M4 L nucl.        ATGGATATGGAAGTTCGGGATTCTTCTACTAGCCTGAAAATTGAGACGAATGTTAGAAAT

                  5341                                                     5400
GenBank L nucl.   TATGTGCACCGGATTTTGGATGAGCAAGGAGTTTTAATCTACAAGACTTATGGAACATAT
HR L nucl.        TATGTGCACCGGATTTTGGATGAGCAAGGAGTTTTAATCTACAAGACTTATGGAACATAT
M2 L nucl.        ............................................................
M4 L nucl.        TATGTGCACCGGATTTTGGATGAGCAAGGAGTTTTAATCTACAAGACTTATGGAACATAT

                  5401                                                     5460
GenBank L nucl.   ATTTGTGAGAGCGAAAAGAATGCAGTAACAATCCTTGGTCCCATGTTCAAGACGGTCGAC
HR L nucl.        ATTTGTGAGAGCGAAAAGAATGCAGTAACAATCCTTGGTCCCATGTTCAAGACGGTCGAC
M2 L nucl.        ............................................................
M4 L nucl.        ATTTGTGAGAGCGAAAAGAATGCAGTAACAATCCTTGGTCCCATGTTCAAGACGGTCGAC

                  5461                                                     5520
GenBank L nucl.   TTAGTTCAAACAGAATTTAGTAGTTCTCAAACGTCTGAAGTATATATGGTATGTAAAGGT
HR L nucl.        TTAGTTCAAACAGAATTTAGTAGTTCTCAAACGTCTGAAGTATATATGGTATGTAAAGGT
M2 L nucl.        ............................................................
M4 L nucl.        TTAGTTCAAACAGAATTTAGTAGTTCTCAAACGTCTGAAGTATATATGGTATGTAAAGGT

                  5521                                                     5580
GenBank L nucl.   TTGAAGAAATTAATCGATGAACCCAATCCCGATTGGTCTTCCATCAATGAATCCTGGAAA
HR L nucl.        TTGAAGAAATTAATCGATGAACCCAATCCCGATTGGTCTTCCATCAATGAATCCTGGAAA
M2 L nucl.        ............................................................
M4 L nucl.        TTGAAGAAATTAATCGATGAACCCAATCCCGATTGGTCTTCCATCAATGAATCCTGGAAA

                  5581                                                     5640
GenBank L nucl.   AACCTGTACGCATTCCAGTCATCAGAACAGGAATTTGCCAGAGCAAAGAAGGTTAGTACA
HR L nucl.        AACCTGTACGCATTCCAGTCATCAGAACAGGAATTTGCCAGAGCAAAGAAGGTTAGTACA
M2 L nucl.        ............................................................
M4 L nucl.        AACCTGTACGCATTCCAGTCATCAGAACAGGAATTTGCCAGAGCAAAGAAGGTTAGTACA

                  5641                                                     5700
GenBank L nucl.   TACTTTACCTTGACAGGTATTCCCTCCCAATTCATTCCTGATCCTTTTGT□AACATTGAG
HR L nucl.        TACTTTACCTTGACAGGTATTCCCTCCCAATTCATTCCTGATCCTTTTGTGAACATTGAG
M2 L nucl.        ............................................................
M4 L nucl.        TACTTTACCTTGACAGGTATTCCCTCCCAATTCATTCCTGATCCTTTTGTGAACATTGAG

                  5701                                                     5760
GenBank L nucl.   ACTATGCTACAAATATTCGGAGTACCCACGGGTGTGTCTCATGCGGCTGCCTTAAAATCA
HR L nucl.        ACTATGCTACAAATATTCGGAGTACCCACGGGTGTGTCTCATGCGGCTGCCTTAAAATCA
M2 L nucl.        ............................................................
M4 L nucl.        ACTATGCTACAAATATTCGGAGTACCCACGGGTGTGTCTCATGCGGCTGCCTTAAAATCA

                  5761                                                     5820
GenBank L nucl.   TCTGATAGACCTGCAGATTTATTGACCATTAGCCTTTTTTATATGGCGATTATATCGTAT
HR L nucl.        TCTGATAGACCTGCAGATTTATTGACCATTAGCCTTTTTTATATGGCGATTATATCGTAT
M2 L nucl.        ............................................................
M4 L nucl.        TCTGATAGACCTGCAGATTTATTGACCATTAGCCTTTTTTATATGGCGATTATATCGTAT
```

FIGURE 22-11

```
                      5821                                              5880
GenBank L nucl.   TATAACATCAATCATATCAGAGTAGGACCGATACCTCCGAACCCCCCATCAGATGGAATT
HR   L nucl.      TATAACATCAATCATATCAGAGTAGGACCGATACCTCCGAACCCCCCATCAGATGGAATT
M2   L nucl.      ............................................................
M4   L nucl.      TATAACATCAATCATATCAGAGTAGGACCGATACCTCCGAACCCCCCATCAGATGGAATT

                      5881                                              5940
GenBank L nucl.   GCACAAAATGTGGGGATCGCTATAACTGGTATAAGCTTTTGGCTGAGTTTGATGGAGAAA
HR   L nucl.      GCACAAAATGTGGGGATCGCTATAACTGGTATAAGCTTTTGGCTGAGTTTGATGGAGAAA
M2   L nucl.      ............................................................
M4   L nucl.      GCACAAAATGTGGGGATCGCTATAACTGGTATAAGCTTTTGGCTGAGTTTGATGGAGAAA

                      5941                                              6000
GenBank L nucl.   GACATTCCACTATATCAACAGTGTTTAGCAGTTATCCAGCAATCATTCCCGATTAGGTGG
HR   L nucl.      GACATTCCACTATATCAACAGTGTTTAGCAGTTATCCAGCAATCATTCCCGATTAGGTGG
M2   L nucl.      ............................................................
M4   L nucl.      GACATTCCACTATATCAACAGTGTTTAGCAGTTATCCAGCAATCATTCCCGATTAGGTGG

                      6001                                              6060
GenBank L nucl.   GAGGCTGTTTCAGTAAAAGGAGGATACAAGCAGAAGTGGAGTACTAGAGGTGATGGGCTC
HR   L nucl.      GAGGCTGTTTCAGTAAAAGGAGGATACAAGCAGAAGTGGAGTACTAGAGGTGATGGGCTC
M2   L nucl.      ............................................................
M4   L nucl.      GAGGCTGTTTCAGTAAAAGGAGGATACAAGCAGAAGTGGAGTACTAGAGGTGATGGGCTC

                      6061                                              6120
GenBank L nucl.   CCAAAAGATACCCGAACTTCAGACTCCTTGGCCCCAATCGGGAACTGGATCAGATCTCTG
HR   L nucl.      CCAAAAGATACCCGAATTTCAGACTCCTTGGCCCCAATCGGGAACTGGATCAGATCTCTG
M2   L nucl.      ............................................................
M4   L nucl.      CCAAAAGATACCCGAATTTCAGACTCCTTGGCCCCAATCGGGAACTGGATCAGATCTCTG

                      6121                                              6180
GenBank L nucl.   GAATTGGTCCGAAACCAAGTTCGTCTAAATCCATTCAATGAGATCTTGTTCAATCAGCTA
HR   L nucl.      GAATTGGTCCGAAACCAAGTTCGTCTAAATCCATTCAATGAGATCTTGTTCAATCAGCTA
M2   L nucl.      ............................................................
M4   L nucl.      GAATTGGTCCGAAACCAAGTTCGTCTAAATCCATTCAATGAGATCTTGTTCAATCAGCTA

                      6181                                              6240
GenBank L nucl.   TGTCGTACAGTGGATAATCATTTGAAATGGTCAAATTTGCGAACAAACACAGGAATGATT
HR   L nucl.      TGTCGTACAGTGGATAATCATTTGAAATGGTCAAATTTGCGAAAAAACACAGGAATGATT
M2   L nucl.      ............................................................
M4   L nucl.      TGTCGTACAGTGGATAATCATTTGAAATGGTCAAATTTGCGAAAAAACACAGGAATGATT

                      6241                                              6300
GenBank L nucl.   GAATGGATCAATAGACGAATTTCAAAAGAAGACCGGTCTATACTGATGTTGAAGAGTGAC
HR   L nucl.      GAATGGATCAATAGACGAATTTCAAAAGAAGACCGGTCTATACTGATGTTGAAGAGTGAC
M2   L nucl.      ............................................................
M4   L nucl.      GAATGGATCAATAGACGAATTTCAAAAGAAGACCGGTCTATACTGATGTTGAAGAGTGAC
```

FIGURE 22-12

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                   6301                                                        6360
GenBank L nucl.    CTACACGAGGAAAACTCTTGGAGAGATTAA..............................
HR L nucl.         CTACATGAGGAAAACTCTTGGAGAGATTAAAAAAATCATGAGGAGACTCCAAACTTTAAGT
M2 L nucl.         ............................................................
M4 L nucl.         CTACATGAGGAAAACTCTTGGAGAGATTAA..............................

                   6361                          6395
GenBank L nucl.    ...................................
HR L nucl.         ATGAAAAAAACTTTGATCCTTAAGACCCTCTTGTG
M2 L nucl.         ...................................
M4 L nucl.         ...................................
```

FIGURE 22-13

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              1                                                           60
GenBank L a.a.  MEVHDFETDEFNDFNEDDYATREFLNPDERMTYLNHADYNLNSPLISDDIDNLIRKFNSL
HR L a.a.       ............................................................
M4 L a.a.       MEVHDFETDEFNDFNEDDYATREFLNPDERMTYLNHADYNLNSPLISDDIDNLIRKFNSL

              61                                                          120
GenBank L a.a.  PIPSMWDSKNWDGVLEMLTSCQANPISTSQMHKWMGSWLMSDNHDASQGYSFLHEVDKEA
HR L a.a.       ............................................................
M4 L a.a.       PIPSMWDSKNWDGVLEMLTSCQANPISTSQMHKWMGSWLMSDNHDASQGYSFLHEVDKEA

              121                                                         180
GenBank L a.a.  EITFDVVETFIRGWGNKPIEYIKKERWTDSFKILAYLCQKFLDLHKLTLILNAVSEVELL
HR L a.a.       ............................................................
M4 L a.a.       EITFDVVETFIRGWGNKPIEYIKKERWTDSFKILAYLCQKFLDLHKLTLILNAVSEVELL

              181                                                         240
GenBank L a.a.  NLARTFKGKVRRSSHGTNICRIRVPSLGPTFISEGWAYFKKLDILMDRNFLLMVKDVIIG
HR L a.a.       ............................................................
M4 L a.a.       NLARTFKGKVRRSSHGTNICRLRVPSLGPTFISEGWAYFKKLDILMDRNFLLMVKDVIIG

              241                                                         300
GenBank L a.a.  RMQTVLSMVCRIDNLFSEQDIFSLLNIYRIGDKIVERQGNFSYDLIKMVEPICNLKLMKL
HR L a.a.       ............................................................
M4 L a.a.       RMQTVLSMVCRIDNLFSEQDIFSLLNIYRIGDKIVERQGNFSYDLIKMVEPICNLRLMKL

              301                                                         360
GenBank L a.a.  ARESRPLVPQFPHFENHIKTSVDEGAKIDRGIRFLHDQIMSVKTVDLTLVIYGSFRHWGH
HR L a.a.       ..........................................................HWGH
M4 L a.a.       ARESRPLVPQFPHFENHIKTSVDEGAKIDRGIRFLHDQIMSVKTVDLTLVIYGSFRHWGH

              361                                                         420
GenBank L a.a.  PFIDYYTGLEKLHSQVTMKKDIDVSYAKALASDLARIVLFQQFNDHKKWFVNGDLLPHDH
HR L a.a.       PFIDYYAGLEKLHSQVTXKKDIDVSYAKALASDLARIVLFQQFNDHXKWFVNGDLLPHDH
M4_L.pro        PFIDYYAGLEKLHSQVTMKKDIDVSYAKALASDLARIVLFQQFNDHKKWFVNGDLLPHDH

              421                                                         480
GenBank L a.a.  PFKSHVKENTWPTAAQVQDFGDKWHELPLIKCFEIPDLLDPSIIYSDKSHSMNRSEVLKH
HR L a.a.       PFKSHVKENTWPTAAQVQDFGDKWHELPLIKCFEIPDLLDPSIIYSDKSHSMNRSEVLKH
M4 L a.a.       PFKSHVKENTWPTAAQVQDFGDKWHELPLIKCFEIPDLLDPSIIYSDKSHSMNRSEVLKH

              481                                                         540
GenBank L a.a.  VRMNPNTPIPSKKVLQTMLDTKATNWKEFLKEIDEKGLDDDDLIIGLKGKERELKLAGRF
HR L a.a.       VRMNPNTPIPSKKVLQTMLDTKATNWKEFLKEIDEKGLDDDDLIIGLKGKERELKLAGRF
M4 L a.a.       VRMNPNTPIPSKKVLQTMLDTKATNWKEFLKEIDEKGLDDDDLIIGLKGKERELKLAGRF

              541                                                         600
GenBank L a.a.  FSLMSWKLREYFVITEYLIKTHFVPMFKGLTMADDLTAVIKKMLDSSSGQGLKSYEAICI
HR L a.a.       FSLMSWKLREYFVITEYLIKTHFVPMFKGLTMADDLTAVIKKMLDSSSGQGLKSYEAICI
M4 L a.a.       FSLMSWKLREYFVITEYLIKTHFVPMFKGLTMADDLTAVIKKMLDSSSGQGLKSYEAICI
```

FIGURE 23-1

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                        601                                                    660
GenBank L  a.a.  ANHIDYEKWNNHQRKLSNGPVFRVMGQFLGYPSLIERTHEFFEKSLIYYNGRPDLMRVHN
HR L a.a.        ANHIDYEKWNNHQRKLSNGPVFRVMGQFLGYPSLIERTHEFFEKSLIYYNGRPDLMRVHN
M4 L a.a.        ANHIDYEKWNNHQRKLSNGPVFRVMGQFLGYPSLIERTHEFFEKSLIYYNGRPDLMRVHN

                        661                                                    720
GenBank L  a.a.  NTLINSTSQRVCWQGQEGGLEGLRQKGWⓉILNLLVIQREAKIRNTAVKVLAQGDNQVICT
HR L a.a.    ‥‥  NTLINSTSQRVCWQGQEGGLEGLRQKGWSILNLLVIQREAKIRNTAVKVLAQGDNQVICT
M4 L a.a.        NTLINSTSQRVCWQGQEGGLEGLRQKGWSILNLLVIQREAKIRNTAVKVLAQGDNQVICT

                        721                                                    780
GenBank L  a.a.  QYKTKKSRNVVELQGALNQMVSNNEKIMTAIKIGTGKLGLLINDDETMQSADYLNYGKIP
HR L a.a.        QYKTKKSRNVVELQGALNQMVSNNEKIMTAIKIGTGKLGLLINDDETMQSADYLNYGKIP
M4 L a.a.        QYKTKKSRNVVELQGALNQMVSNNEKIMTAIKIGTGKLGLLINDDETMQSADYLNYGKIP

                        781                                                    840
GenBank L  a.a.  IFRGVIRGLETKRWSRVTCVTNDQIPTCANIMSSVSTNALTVAHFAENPINAMIQYNYFG
HR L a.a.        IFRGVIRGLETKRWSRVTCVTNDQIPTCANIMSSVSTNALTVAHFAENPINAMIQYNYFG
M4 L a.a.        IFRGVIRGLETKRWSRVTCVTNDQIPTCANIMSSVSTNALTVAHFAENPINAMIQYNYFG

                        841                                                    900
GenBank L  a.a.  TFARLLLMMHDPALRQSLYEVQDKIPGLHSSTFKYAMLYLDPSIGGVSGMSLSRFLIRAF
HR L a.a.        TFARLLLMMHDPALRQSLYEVQDKIPGLHSSTFKYAMLYLDPSIGGVSGMSLSRFLIRAF
M4 L a.a.        TFARLLLMMHDPALRQSLYEVQDKIPGLHSSTFKYAMLYLDPSIGGVSGMSLSRFLIRAF

                        901                                                    960
GenBank L  a.a.  PDPVTESLSFWRFIHVHARSEHLKEMSAVFGNPEIAKFRITHIDKLVEDPTSLNIAMGMS
HR L a.a.        PDPVTESLSFWRFIHVHARSEHLKEMSAVFGNPEIAKFRITHIDKLVEDPTSLNIAMGMS
M4 L a.a.        PDPVTESLSFWRFIHVHARSEHLKEMSAVFGNPEIAKFRITHIDKLVEDPTSLNIAMGMS

                        961                                                    1020
GenBank L  a.a.  PANLLKTEVKKCLIESRQTIRNQVIKDATIYLYHEEDRLRSFLWSINPLFPRFLSEFKSG
HR L a.a.        PANLLKTEVKKCLIESRQTIRNQVIKDATIYLYHEEDRLRSFLWSINPLFPRFLSEFKSG
M4 L a.a.        PANLLKTEVKKCLIESRQTIRNQVIKDATIYLYHEEDRLRSFLWSINPLFPRFLSEFKSG

                        1021                                                   1080
GenBank L  a.a.  TFLGVADGLISLFQNSRTIRNSFKKKYHRELDDLIVRSEVSSLTHLGKLHLRRGSCKMWT
HR L a.a.        TFLGVADGLISLFQNSRTIRNSFKKKYHRELDDLIVRSEVSSLTHLGKLHLRRGSCKMWT
M4 L a.a.        TFLGVADGLISLFQNSRTIRNSFKKKYHRELDDLIVRSEVSSLTHLGKLHLRRGSCKMWT

                        1081                                                   1140
GenBank L  a.a.  CSATHADTLRYKSWGRTVIGTTVPHPLEMLGPQHRKETPCAPCNTSGFNYVSVHCPDGIH
HR L a.a.        CSATHADTLRYKSWGRTVIGTTVPHPLEMLGPQHRKETPCAPCNTSGFNYVSVHCPDGIH
M4 L a.a.        CSATHADTLRYKSWGRTVIGTTVPHPLEMLGPQHRKETPCAPCNTSGFNYVSVHCPDGIH

                        1141                                                   1200
GenBank L  a.a.  DVFSSRGPLPAYLGSKTSESTSILQPWERESKVPLIKRATRLRDAISWFVEPDSKLAMTI
HR L a.a.        DVFSSRGPLPAYLGSKTSESTSILQPWERESKVPLIKRATRLRDAISWFVEPDSKLAMTI
M4 L a.a.        DVFSSRGPLPAYLGSKTSESTSILQPWERESKVPLIKRATRLRDAISWFVEPDSKLAMTI
```

FIGURE 23-2

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              1201                                                         1260
GenBank L  a.a.  LSNIHSLTGEEWTKRQHGFKRTGSALHRFSTSRMSHGGFASQSTAALTRLMATTDTMRDL
HR L a.a.        LSNIHSLTGEEWTKRQHGFKRTGSALHRFSTSRMSHGGFASQSTAALTRLMATTDTMRDL
M4 L a.a.        LSNIHSLTGEEWTKRQHGFKRTGSALHRFSTSRMSHGGFASQSTAALTRLMATTDTMRDL

              1261                                                         1320
GenBank L  a.a.  GDQNFDFLFQATLLYAQITTTVARDGWITSCTDHYHIACKSCLRPIEEITLDSSMDYTPP
HR L a.a.        GDQNFDFLFQATLLYAQITTTVARDGWITSCTDHYHIACKSCLRPIEEITLDSSMDYTPP
M4 L a.a.        GDQNFDFLFXATLLYAXITTTVARDGWITSCTDHYHIACKSCLRPIEEITLDSSMDYTPP

              1321                                                         1380
GenBank L  a.a.  DVSHVLKTWRNGEGSWGQEIKQIYPLEGNWKNLAPAEQSYQVGRCIGFLYGDLAYRKSTH
HR L a.a.        DVSHVLKTWRNGEGSWGQEIKQIYPLEGNWKNLAPAEQSYQVGRCIGFLYGDLAYRKSTH
M4 L a.a.        DVSHVLKTWRNGEGSWGQEIKQIYPLEGNWKNLAPAEQSYQVGRCIGFLYGDLAYRKSTH

              1381                                                         1440
GenBank L  a.a.  AEDSSLFPLSIQGRIRGRGFLKGLLDGLMRASCCQVIHRRSLAHLKRPANAVYGGLIYLI
HR L a.a.        AEDSSLFPLSIQGRIRGRGFLKGLLDGLMRASCCQVIHRRSLAHLKRPANAVYGGLIYLI
M4 L a.a.        AEDSSLFPLSIQGRIRGRGFLKGLLDGLMRASCCQVIHRRSLAHLKRPANAVYGGLIYLI

              1441                                                         1500
GenBank L  a.a.  DKLSVSPPFLSLTRSGPIRDELETIPHKIPTSYPTSNRDMGVIVRNYFKYQCRLIEKGKY
HR L a.a.        DKLSVSPPFLSLTRSGPIRDELETIPHKIPTSYPTSNRDMGVIVRNYFKYQCRLIEKGKY
M4 L a.a.        DKLSVSPPFLSLTRSGPIRDELETIPHKIPTSYPTSNRDMGVIVRNYFKYQCRLIEKGKY

              1501                                                         1560
GenBank L  a.a.  RSHYSQLWLFSDVLSIDFIGPFSISTTLLQILYKPFLSGKDKNELRELANLSSLLRSGEG
HR L a.a.        RSHYSQLWLFSDVLSIDFIGPFSISTTLLQILYKPFLSGKDKNELRELANLSSLLRSGEG
M4 L a.a.        RSHYSQLWLFSDVLSIDFIGPFSISTTLLQILYKPFLSGKDKNELRELANLSSLLRSGEG

              1561                                                         1620
GenBank L  a.a.  WEDIHVKFFTKDILLCPEEIRHACKFGIAKDNNKDMSYPPWGRESRGTITTIPVYYTTTP
HR L a.a.        WEDIHVKFFTKDILLCPEEIRHACKFGIAKDNNKDMSYPPWGRESRGTITTIPVYYTTTP
M4 L a.a.        WEDIHVKFFTKDILLCPEEIRHACKFGIAKDNNKDMSYPPWGRESRGTITTIPVYYTTTP

              1621                                                         1680
GenBank L  a.a.  YPKMLEMPPRIQNPLLSGIRLGQLPTGAHYKIRSILHGMGIHYRDFLSCGDGSGGMTAAL
HR L a.a.        YPKMLEMPPRIQNPLLSGIRLGQLPTGAHYKIRSILHGMGIHYRDFLSCGDGSGGMTAAL
M4 L a.a.        YPKMLEMPPRIQNPLLSGIRLGQLPTGAHYKIRSILHGMGIHYRDFLSCGDGSGGMTAAL

              1681                                                         1740
GenBank L  a.a.  LRENVHSRGIFNSLLELSGSVMRGASPEPPSALETLGGDKSRCVNGETCWEYPSDLCDPR
HR L a.a.        LRENVHSRGIFNSLLELSGSVMRGASPEPPSALETLGGDKSRCVNGETCWEYPSDLCDPR
M4 L a.a.        LRENVHSRGIFNSLLELSGSVMRGASPEPPSALETLGGDKSRCVNGETCWEYPSDLCDPR

              1741                                                         1800
GenBank L  a.a.  TWDYFLRLKAGLGLQIDLIVMDMEVRDSSTSLKIETNVRNYVHRILDEQGVLIYKTYGTY
HR L a.a.        TWDYFLRLKAGLGLQIDLIVMDMEVRDSSTSLKIETNVRNYVHRILDEQGVLIYKTYGTY
M4 L a.a.        TWDYFLRLKAGLGLQIDLIVMDMEVRDSSTSLKIETNVRNYVHRILDEQGVLIYKTYGTY

              1801                                                         1860
GenBank L  a.a.  ICESEKNAVTILGPMFKTVDLVQTEFSSSQTSEVYMVCKGLKKLIDEPNPDWSSINESWK
HR L a.a.        ICESEKNAVTILGPMFKTVDLVQTEFSSSQTSEVYMVCKGLKKLIDEPNPDWSSINESWK
M4 L a.a.        ICESEKNAVTILGPMFKTVDLVQTEFSSSQTSEVYMVCKGLKKLIDEPNPDWSSINESWK
```

FIGURE 23-3

```
                      1861                                                        1920
GenBank L   a.a.      NLYAFQSSEQEFARAKKVSTYFTLTGIPSQFIPDPFVNIETMLQIFGVPTGVSHAAALKS
HR L a.a.             NLYAFQSSEQEFARAKKVSTYFTLTGIPSQFIPDPFVNIETMLQIFGVPTGVSHAAALKS
M4 L a.a.             NLYAFQSSEQEFARAKKVSTYFTLTGIPSQFIPDPFVNIETMLQIFGVPTGVSHAAALKS

                      1921                                                        1980
GenBank L   a.a.      SDRPADLLTISLFYMAIISYYNINHIRVGPIPPNPPSDGIAQNVGIAITGISFWLSLMEK
HR L a.a.             SDRPADLLTISLFYMAIISYYNINHIRVGPIPPNPPSDGIAQNVGIAITGISFWLSLMEK
M4 L a.a.             SDRPADLLTISLFYMAIISYYNINHIRVGPIPPNPPSDGIAQNVGIAITGISFWLSLMEK

                      1981                                                        2040
GenBank L   a.a.      DIPLYQQCLAVIQQSFPIRWEAVSVKGGYKQKWSTRGDGLPKDTR☐SDSLAPIGNWIRSL
HR L a.a.             DIPLYQQCLAVIQQSFPIRWEAVSVKGGYKQKWSTRGDGLPKDTRISDSLAPIGNWIRSL
M4 L a.a.             DIPLYQQCLAVIQQSFPIRWEAVSVKGGYKQKWSTRGDGLPKDTRISDSLAPIGNWIRSL

                      2041                                                        2100
GenBank L   a.a.      ELVRNQVRLNPFNEILFNQLCRTVDNHLKWSNLR☐NTGMIEWINRRISKEDRSILMLKSD
HR L a.a.             ELVRNQVRLNPFNEILFNQLCRTVDNHLKWSNLRKNTGMIEWINRRISKEDRSILMLKSD
M4 L a.a.             ELVRNQVRLNPFNEILFNQLCRTVDNHLKWSNLRKNTGMIEWINRRISKEDRSILMLKSD

                      2101      2110
GenBank L   a.a.      LHEENSWRD
HR L a.a.             LHEENSWRD
M4 L a.a.             LHEENSWRD
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FIGURE 23-4